Webster Lake
Aquatic Vegetation Management Plan
2006 Update
February 15, 2007

Prepared for:
Webster Lake Conservation Association
85 EMS W19
North Webster, IN 46555

Prepared by:
Aquatic Control, Inc.
PO Box 100
Seymour, Indiana 47274

Executive Summary

Aquatic Control was contracted by the Webster Lake Conservation Association to complete aquatic vegetation sampling in order to update their lakewide, long-term integrated aquatic vegetation management plan. Funding for development of this plan was obtained from the Webster Lake Conservation Association and the Indiana Department of Natural Resources-Division of Fish and Wildlife as part of the Lake and River Enhancement fund (LARE). The update serves as a tool to track changes in the vegetation community, to adjust the action plan as needed, and to maintain eligibility for additional LARE funds. Items covered include the 2006 sampling results, a review of the 2006 vegetation controls, and updates to the budget and action plans.

Aquatic vegetation is an important component of lakes in Indiana; however, as a result of many factors this vegetation can develop to a nuisance level. Nuisance aquatic vegetation, as used in this paper, describes plant growth that negatively impacts the present uses of the lake including fishing, boating, swimming, aesthetic, and lakefront property values. The primary nuisance species within Webster and Backwater Lakes are the exotic plants Eurasian watermilfoil (*Myriophyllum spicatum)* and curlyleaf pondweed (*Potamogetan crispus)*. Other nuisance vegetation, which has historically had negative impacts on Webster Lake, includes the native species common coontail (*Ceratophyllum demersum)* and duckweed (*Lemna spp*.). Due to the morphology of the lakes and extensive shallow areas, a large percentage of the lakes can become infested with heavy growths of these nuisance species. The primary recommendations for plant control within Webster Lake are to selectively control of Eurasian watermilfoil with triclopyr herbicide, control of curlyleaf pondweed with early season Aquathol treatments, and control nuisance vegetation in near-shore high-use areas with contact herbicide treatments. These treatments were very effective at controlling nuisance vegetation in 2006. In addition to treatment of Webster Lake, it is recommended that curlyleaf pondweed and Eurasian watermilfoil treatments be expanded into Backwater Lake. This treatment will combine 2,4-D with Aquathol in an effort to control both milfoil and curlyleaf pondweed with the same treatment. This treatment should be completed in mid to late April, prior to curlyleaf pondweed turion production.

Along with herbicide applications, it will be important to continue monitoring the vegetation in a similar fashion. Three Tier II surveys should be sufficient to keep track of any major changes in the plant population and make appropriate management decisions. Tier I surveys should be replaced with treatment map surveys prior to applications with the exception of Backwater Lake. A Tier I survey should be completed on Backwater in August in order to assess a possible reduction in spatterdock abundance.

It is recommended that WLCA requests $25,000 for a combination treatment to 75 acres curlyleaf pondweed and Eurasian watermilfoil in Backwater Lake, $37,500 for treatment of up to 125 acres of curlyleaf pondweed in Webster Lake, $25,000 for treatment of up to 60 acres of milfoil in Webster Lake, and $6,000 for plant sampling and plan updates on both lakes.

Table of Contents

List of Figures

List of Tables

1.0 INTRODUCTION

This report was created in order to update the Webster Lake Aquatic Vegetation Management Plan. The plan update was funded by the Indiana Department of Natural Resources Lake and River Enhancement Program (LARE) and the Webster Lake Conservation Association. The update serves as a tool to track changes in the vegetation community, to adjust the action plan as needed, and to maintain eligibility for additional LARE funds. Items covered include the 2006 sampling results, a review of the 2006 vegetation controls, and updates to the budget and action plans. Once reviewed and approved, the update should be included in the original vegetation management plan, following the reference section and prior to the appendix.

2.0 2006 PLANT SAMPLING

Three sampling events took place this season on Webster and Backwater Lake. This is more sampling than required by LARE, but it was decided to complete additional surveys in order to better document changes in the plant community following an early season curlyleaf pondweed treatment. The sampling consisted of three Tier II surveys and two Tier I surveys on Webster Lake. Only two Tier I and II surveys were completed on Backwater Lake. In 2007, one change that will be made to the Tier II surveys is the removal of floating vegetation from plant metric calculations.

2.1 Webster Lake Sampling Results

Webster Lake was surveyed on three different occasions in 2006. A Tier II survey was completed on April 4 in order to obtain data prior to the curlyleaf pondweed treatment. A Tier I and Tier II survey were both completed on May 19 in order to document the effects of the curlyleaf treatment, changes in the plant community compared to 2005 and to locate areas of Eurasian watermilfoil. The last survey consisted of Tier I and II surveys which were both completed on August 3 in order to document changes in the plant community compared to previous years and to document the effects of the milfoil treatment.

2.1.1 April survey, Webster Lake

On April 4, 2006 a Tier II survey was completed on Webster Lake. A Secchi disk reading was taken prior to sampling and was found to be at 6.0 feet. Plants were present to a maximum depth of 9 feet. The same 160 points that were sampled in 2005 were used in this survey. Plants were present at 131 of the sites while native plants were present at only 98 sites. A total of nine species were collected of which seven were natives. The maximum number of species collected at a single site was four. The mean number of species collected per site was 1.53 and the mean number of native species collected per site was 0.78 (Table 1). Location and density of aquatic vegetation is illustrated in Figure 1.

Table 1. Occurrence and abundance of submersed aquatic plants in Webster Lake April 4, 2006.

Occurrence and abundance of submersed aquatic plants in Webster Lake						
County:	Kosciusko	Sites with plants:	131	Mean species/site:	1.53	
Date:	4/4/2006	Sites with native plants:	98	Standard error (ms/s):	0.09	
Secchi (ft):	6	Number of species:	9	Mean native species/site:	0.78	
Maximum plant depth (ft):	9	Number of native species:	7	Standard error (mns/s):	0.06	
Trophic status	Mesotrophic	Maximum species/site:	4	Species diversity:	0.78	
Total sites:	160			Native species diversity:	0.62	

All depths (0 to 10 ft)	Frequency of	Rake score frequency per species				Plant Dominance
Species	Occurrence	0	1	3	5	
curlyleaf pondweed	45.6	53.4	16.3	23.8	5.6	14.1
common coontail	38.1	61.9	15.0	18.1	5.0	12.6
Eurasian watermilfoil	29.4	70.6	7.5	16.3	5.6	10.9
slender naiad	28.1	71.9	11.9	14.4	1.9	10.6
Chara spp.	7.5	92.5	3.1	2.5	1.9	3.0
American elodea	1.9	98.1	1.3	0.6	0.0	0.4
northern watermilfoil	1.3	98.7	0.6	0.6	0.0	0.3
small pondweed	0.6	99.4	0.6	0.0	0.0	0.1
large leaf pondweed	0.6	99.4	0.0	0.6	0.0	0.1

Depth: 0 to 5 ft	Frequency of	Rake score frequency per species				Plant Dominance
Species	Occurrence	0	1	3	5	
	47.8	52.2	16.3	28.3	3.3	15.7
common coontail	40.2	59.8	17.4	20.7	2.2	11.5
Eurasian watermilfoil	29.3	69.7	7.6	17.4	4.3	11.1
slender naiad	27.2	72.8	13.0	14.1	0.0	9.3
Chara spp.	10.9	89.1	5.4	3.0	2.2	4.3
American elodea	3.3	96.7	2.2	1.1	0.0	0.7
northern watermilfoil	2.2	97.8	1.1	1.1	0.0	0.4
Potamogeton foliosus/pusillus	1.1	98.9	1.1	0.0	0.0	0.2
large leaf pondweed	1.1	98.9	0.0	1.1	0.0	0.2

Depth: 5 to 10 ft	Frequency of	Rake score frequency per species				Plant Dominance
Species	Occurrence	0	1	3	5	
curlyleaf pondweed	44.6	55.4	16.9	18.5	9.2	12.6
common coontail	36.9	63.1	12.3	15.4	9.2	14.8
Eurasian watermilfoil	30.8	69.2	7.7	15.4	7.7	11.1
slender naiad	30.8	69.2	10.8	15.4	4.6	12.9
Chara spp.	3.1	96.9	0.0	1.5	1.5	1.2

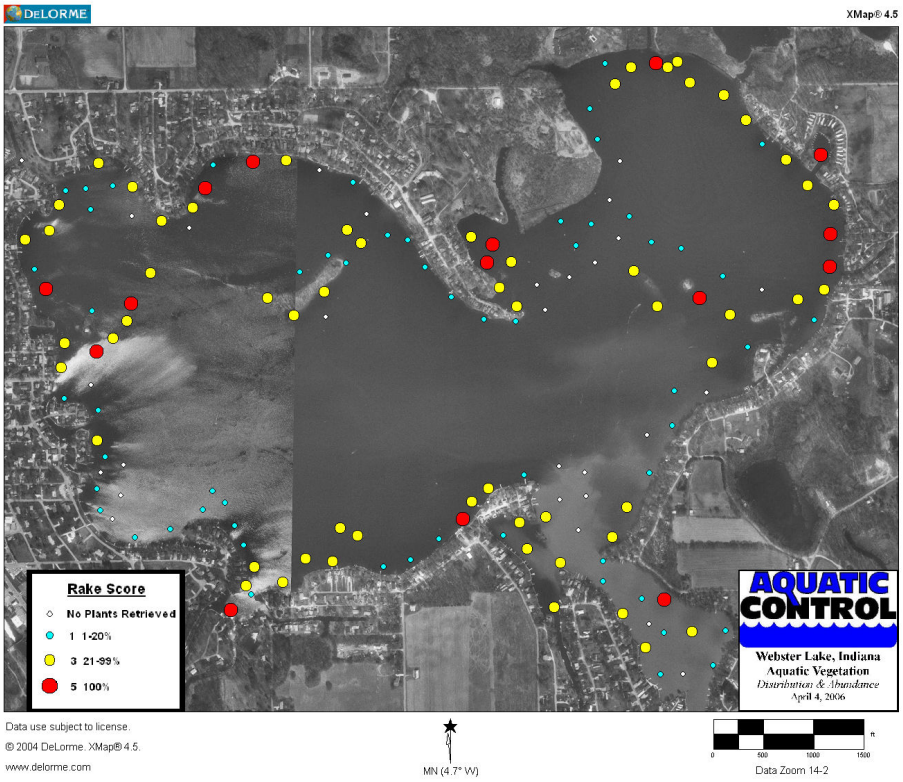


Figure 1. Webster Lake, aquatic vegetation distribution and abundance, April 4, 2006.

Curlyleaf pondweed (*Potamogeton crispus*) occurred at the highest percentage of sample sites (40.2%). Location and density of curlyleaf pondweed is illustrated in Figure 2. Common coontail (*Ceratophyllum demersum*) ranked second in abundance (Figure 3) followed by Eurasian watermilfoil (*Myriophyllum spicatum*), which was found at 29.3% of sites (Figure 4). Common naiad (*Najas flexilis*) was found at 27.2% of sites (Figure 5). Common naiad usually reaches its maximum abundance in late summer, so it was surprising to see it at such a high level this early in the season.

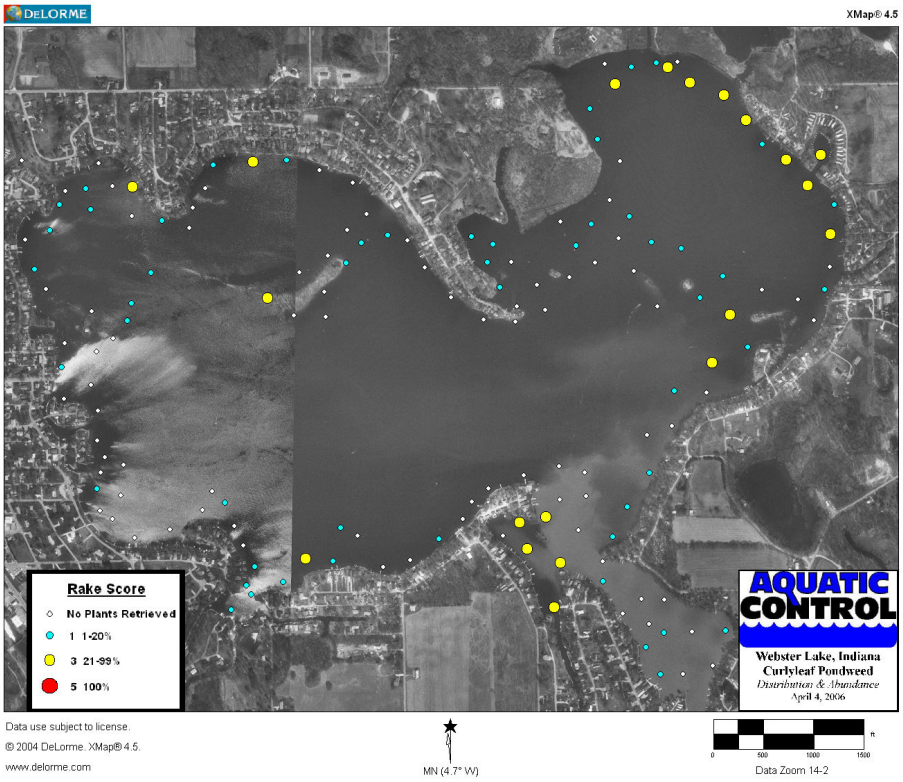


Figure 2. Webster Lake, curlyleaf pondweed distribution and abundance, April 4, 2006.

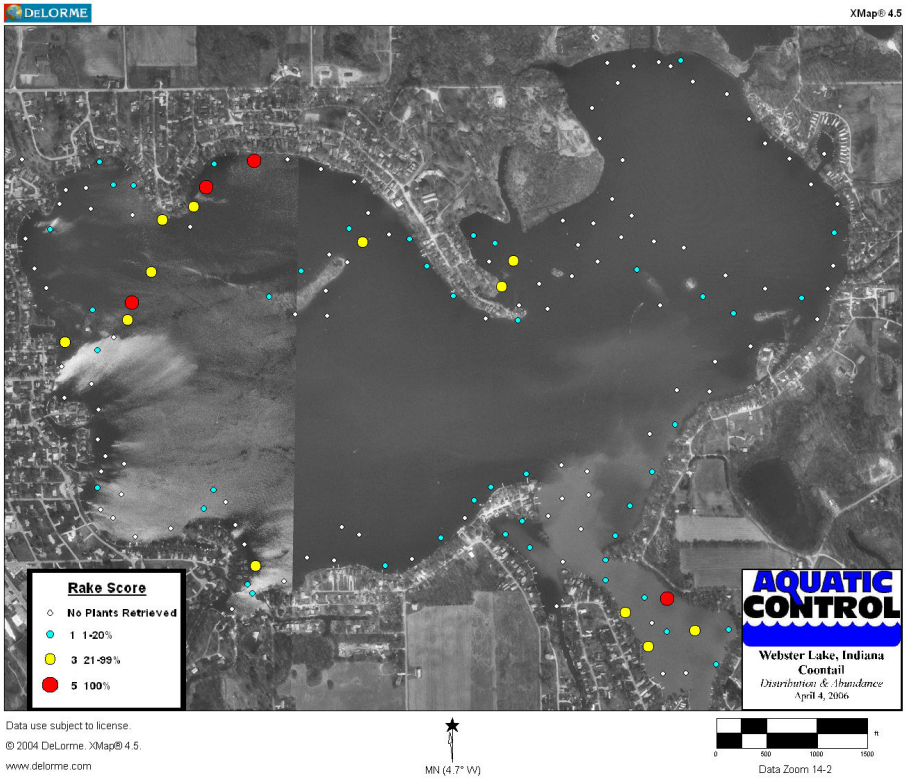


Figure 3. Webster Lake, common coontail distribution and abundance, April 4, 2006.

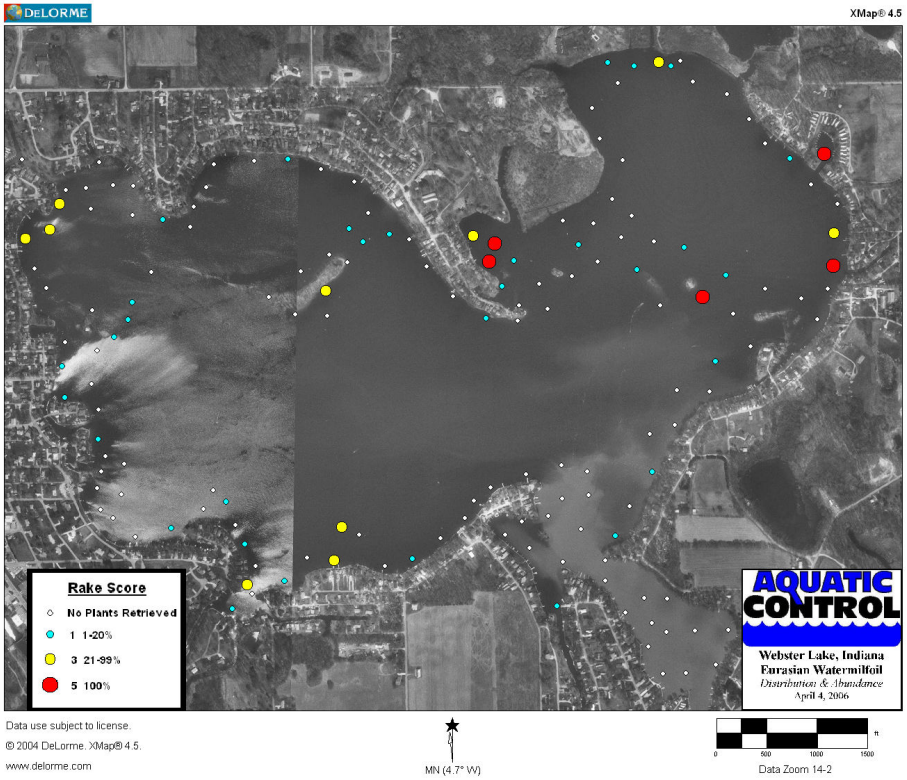


Figure 4. Webster Lake, Eurasian watermilfoil distribution and abundance, April 4, 2006.

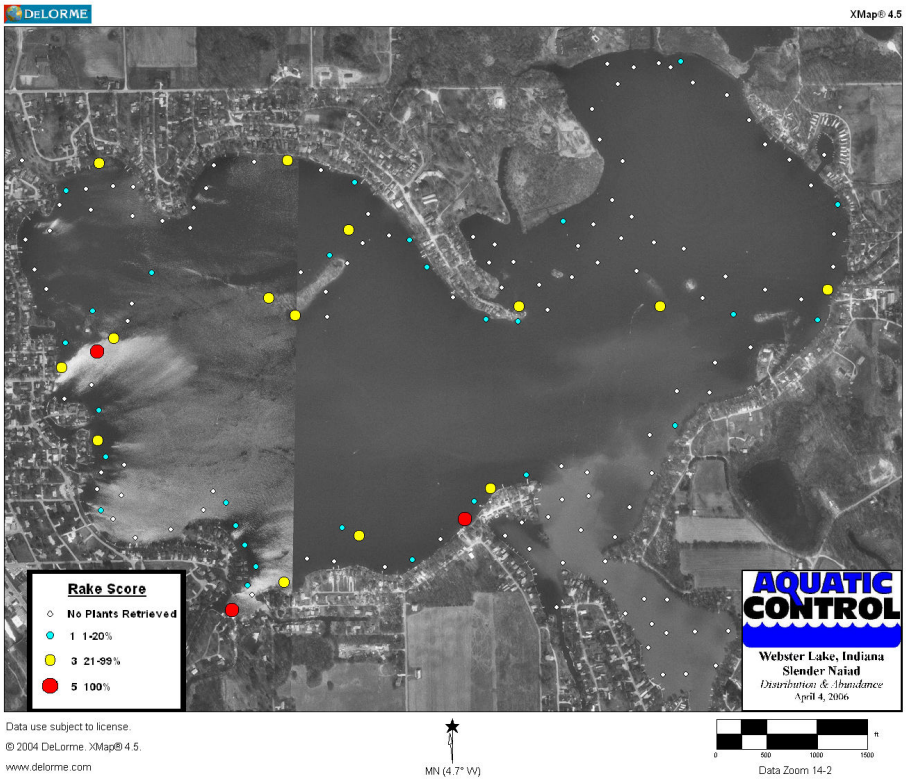


Figure 5. Webster Lake, common naiad distribution and abundance, April 4, 2006.

2.1.2 May survey, Webster Lake

A second sampling event took place on May 19, 2006. A Secchi disk reading was taken prior to sampling and was found to be 7.0 feet. Plants were present to a maximum of 20 feet. A Tier I survey was completed prior to the Tier II survey. Twenty-two different species were found in 30 plant beds. The plant beds encompassed an area of approximately 439.8 acres. Eurasian watermilfoil, coontail, and common naiad were the most abundant submersed species. Eurasian watermilfoil scored a density rating of 3 or higher in plant beds 3, 5, 11, 14, 17, 18, 19, and 24. These dense Eurasian watermilfoil beds comprised an area of 108 acres. Curlyleaf pondweed was observed in only four beds and had a density rating of 1 in all four of the beds (Table 2 and Figure 6).

Table 2. Webster Lake, Tier I Survey results, May 19, 2006.

Lake:Webster								Number of plant beds:30											Littoral zone max depth:20											
Date:5/19/06								Number of species:22																						
Secchi:7.0								Littoral zone size: 439.8																						
Plant Bed I.D.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**
Plant Bed Size	**22.2**	**1.1**	**3.4**	**250.3**	**11.5**	**0.3**	**0.9**	**8.1**	**26.4**	**0.7**	**6.2**	**2.9**	**0.7**	**4.5**	**12.3**	**3.5**	**2.0**	**9.5**	**17.0**	**10.2**	**0.1**	**9.2**	**1.0**	**27.5**	**0.4**	**0.8**	**0.6**	**0.2**	**0.2**	**13.4**
coontail	4	1	3	4	3	-	-	2	2	-	2	2	1	2	3	1	2	3	3	2	-	-	-	3	-	-	1	1	1	3
Eurasian watermilfoil	1	1	3	1	3	-	1	1	2	2	3	1	1	4	1	1	4	3	3	1	-	1	1	4	-	-	1	-	-	1
slender naiad	1	-	1	1	1	-	-	1	1	1	1	1	1	-	1	-	-	1	-	2	1	2	1	1	-	1	-	-	-	2
American elodea	1	-	1	1	-	-	-	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	1
spatterdock	1	4	-	1	1	4	4	1	-	4	-	-	4	-	1	4	1	-	-	1	4	-	4	-	4	4	4	4	4	1
white water lily	1	-	-	1	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	1	-	-	1	-	-	-	-	-	-	-
duckweed	1	-	-	1	-	-	-	-	-	1	-	1	1	-	1	1	-	-	-	1	-	-	-	-	-	-	1	1	1	-
curly-leaf pondweed	1	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1	-	-	-	-	-	-
variable milfoil	-	-	-	1	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
northern watermilfoil	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
chara	-	-	-	1	-	1	-	-	1	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
nitella spp.	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
small pondweed	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
flatstem pondweed	-	-	-	1	-	-	-	-	-	-	1	-	-	1	-	-	-	1	1	1	-	-	-	1	-	-	-	-	-	-
horned pondweed	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
eel grass	-	-	-	1	-	1	1	-	-	1	-	-	1	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-
water stargrass	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
sago pondweed	-	-	-	1	-	-	-	-	1	-	1	-	-	1	-	-	-	1	1	1	-	-	-	1	-	-	-	-	-	-
large leaf pondweed	-	-	-	1	1	-	1	1	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	-
chara spp.	-	-	-	-	-	-	-	1	-	-	-	-	-	1	-	-	-	1	1	2	2	3	1	1	1	1	-	-	-	-
watermeal	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Illinois pondweed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-

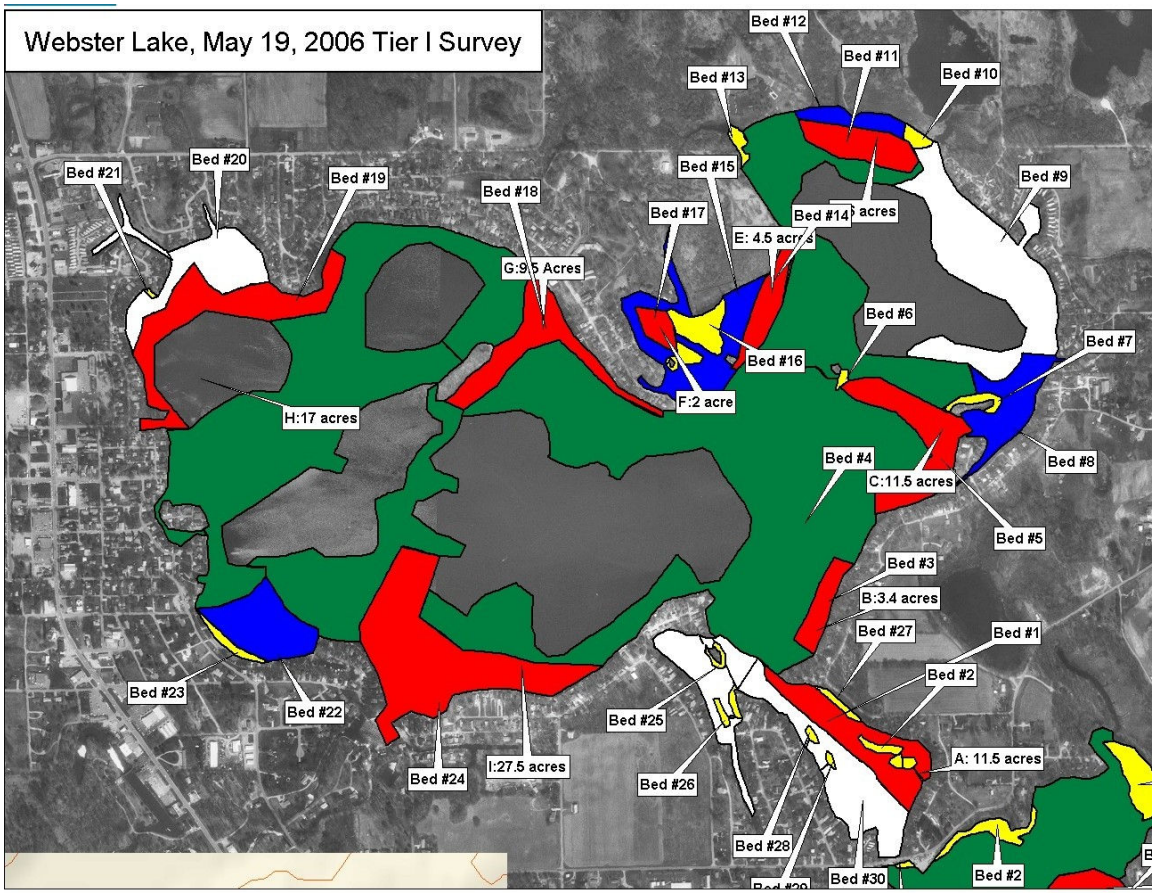


Figure 6. Webster Lake, Tier I plant beds, May 19, 2006.

A Tier II survey was completed following the Tier I survey. This survey was completed according to the new LARE Tier II sampling protocol. Ninety sample points were surveyed with a predetermined number of sites in each depth range (29 sites at 0-5 feet, 27 at 5-10 feet, 24 at 10-15 feet, and 10 at 15-20 feet). Results of the sampling are listed in Table 3 and overall aquatic vegetation distribution and density is illustrated in Figure 7. Plants were present at 76 sites, and native plants were present at 75 of the sample sites. A total of 10 species were collected of which 8 of the species were native. The maximum number of species per site was 6 and the mean number of species collected per site was 1.50. The mean number of native species collected per site was 1.03.

Table 3. Occurrence and abundance of submersed aquatic plants in Webster Lake, May 19, 2006.

Occurrence and abundance of submersed aquatic plants in Webster Lake						
County:	Kosciusko	Sites with plants:	76	Mean species/site:	1.50	
Date:	5/19/2006	Sites with native plants:	75	Standard error (ms/s):	0.12	
Secchi (ft):	10	Number of species:	10	Mean native species/site:	1.03	
Maximum plant depth (ft):	20	Number of native species:	8	Standard error (mns/s):	0.09	
Trophic status	Mesotrophic	Maximum species/site:	6	Species diversity:	0.71	
Total sites:	90			Native species diversity:	0.56	

All depths (0 to 20 ft)	Frequency of	Rake score frequency per species				Plant Dominance
Species	Occurrence	0	1	3	5	
common coontail	65.9	34.1	18.2	23.9	23.9	38.6
Eurasian watermilfoil	40.9	59.1	9.1	14.8	17.0	22.7
slender naiad	20.5	79.5	5.7	8.0	6.8	5.9
Chara spp.	6.8	93.2	1.1	3.4	2.3	3.2
American elodea	6.8	93.2	1.1	3.4	2.3	2.3
curlyleaf pondweed	5.7	94.3	1.1	3.4	1.1	1.6
variable watermilfoil	2.3	97.7	2.3	0.0	0.0	0.5
northern watermilfoil	1.1	98.9	0.0	0.0	1.1	0.2
Nitella spp.	1.1	98.9	1.1	0.0	0.0	0.2
small pondweed	1.1	98.9	0.0	0.0	1.1	0.2

Depth: 0 to 5 ft	Frequency of	Rake score frequency per species				Plant Dominance
Species	Occurrence	0	1	3	5	
common coontail	47.8	52.2	17.4	13.0	17.4	23.5
slender naiad	39.1	60.9	21.7	0.0	4.3	11.3
Eurasian watermilfoil	26.1	73.9	17.4	0.0	8.7	12.2
Chara spp.	13.0	87.0	4.3	4.3	4.3	7.8
variable watermilfoil	8.7	91.3	8.7	0.0	0.0	1.7
American elodea	8.7	91.3	0.0	8.7	0.0	3.5
curlyleaf pondweed	4.3	95.7	4.3	0.0	0.0	0.9

Depth: 5 to 10 ft	Frequency of	Rake score frequency per species				Plant Dominance
Species	Occurrence	0	1	3	5	
common coontail	100.0	0.0	26.7	46.7	26.7	57.3
Eurasian watermilfoil	66.7	33.3	6.7	33.3	26.7	37.3
curlyleaf pondweed	13.3	86.7	0.0	13.3	0.0	2.7
slender naiad	6.7	93.3	0.0	0.0	6.7	1.3

Depth: 10 to 15 ft	Frequency of	Rake score frequency per species				Plant Dominance
Species	Occurrence	0	1	3	5	
common coontail	45.5	54.5	0.0	18.2	27.3	34.5
Eurasian watermilfoil	18.2	77.8	0.0	18.2	18.2	10.9

Depth: 15 to 20 ft	Frequency of	Rake score frequency per species				Plant Dominance
Species	Occurrence	0	1	3	5	
common coontail	40.0	60.0	20.0	20.0	0.0	16.0
Eurasian watermilfoil	20.0	80.0	20.0	0.0	0.0	4.0

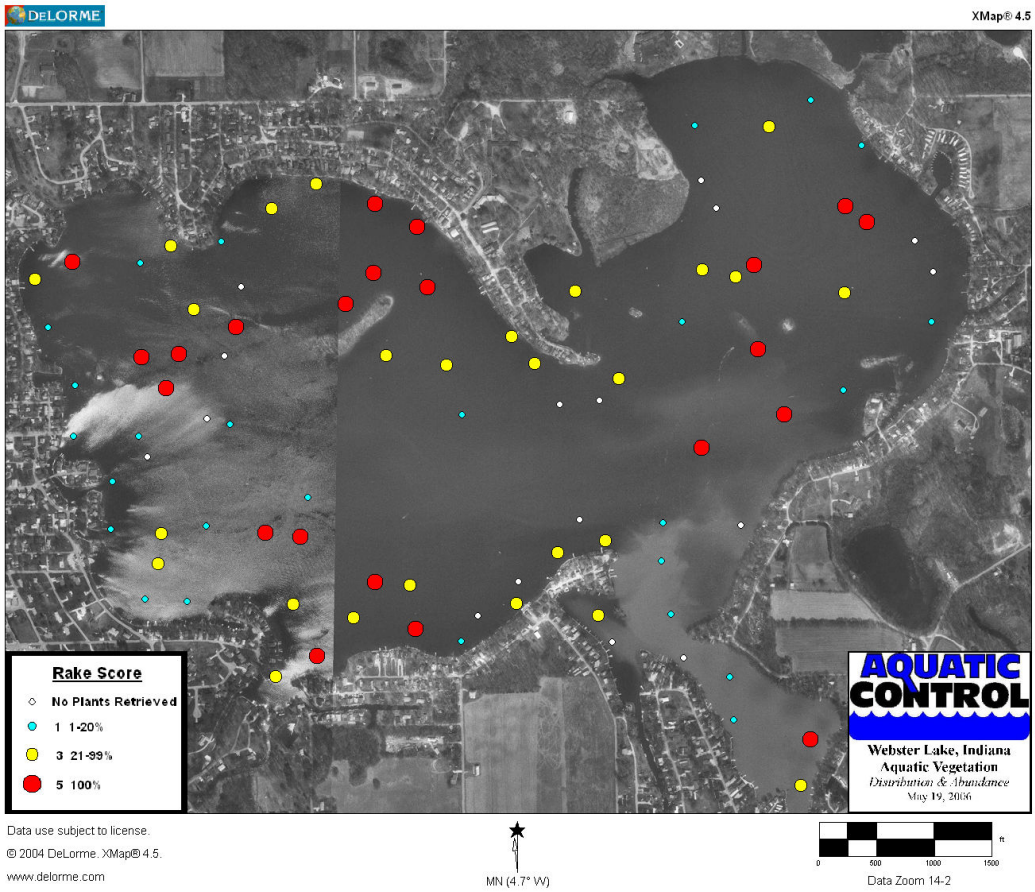


Figure 7. Webster Lake, overall aquatic vegetation distribution and density, May 19, 2006.

Common coontail was collected at the highest percentage of sample sites (65.6%). Location and density of this species is illustrated in Figure 8. Common naiad was collected at 39.4% of sites (Figure 9). Eurasian watermilfoil ranked third in frequency of occurrence (36.4%). Location and density of Eurasian watermilfoil is illustrated in Figure 10. Curlyleaf pondweed was present at only 9.1% of sites (Figure 11).

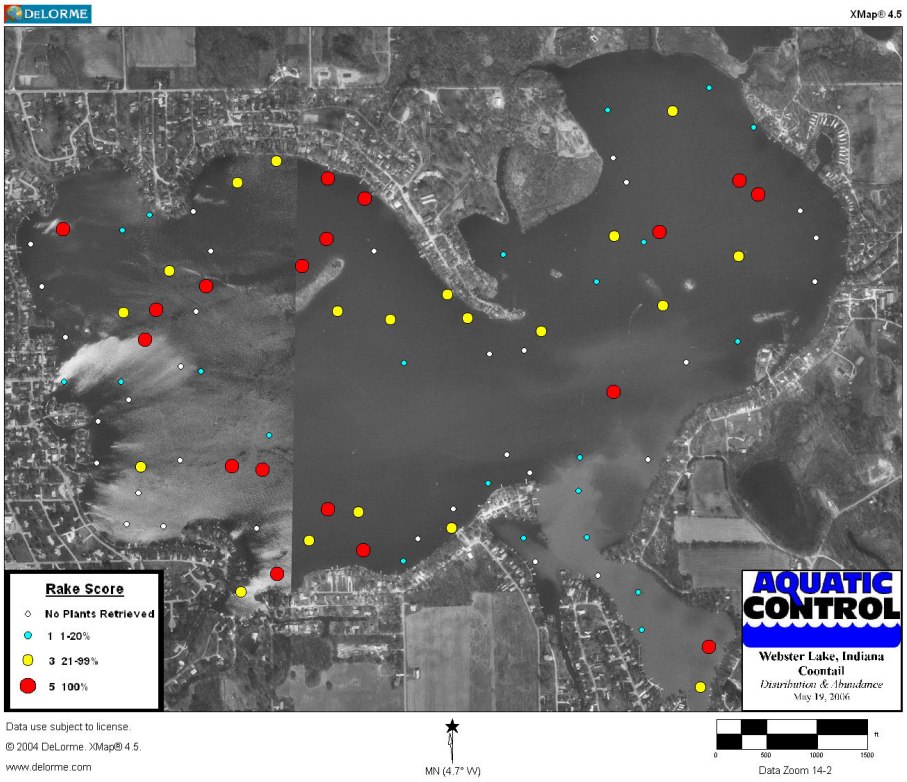


Figure 8. Webster Lake, common coontail distribution and abundance, May 19, 2006.

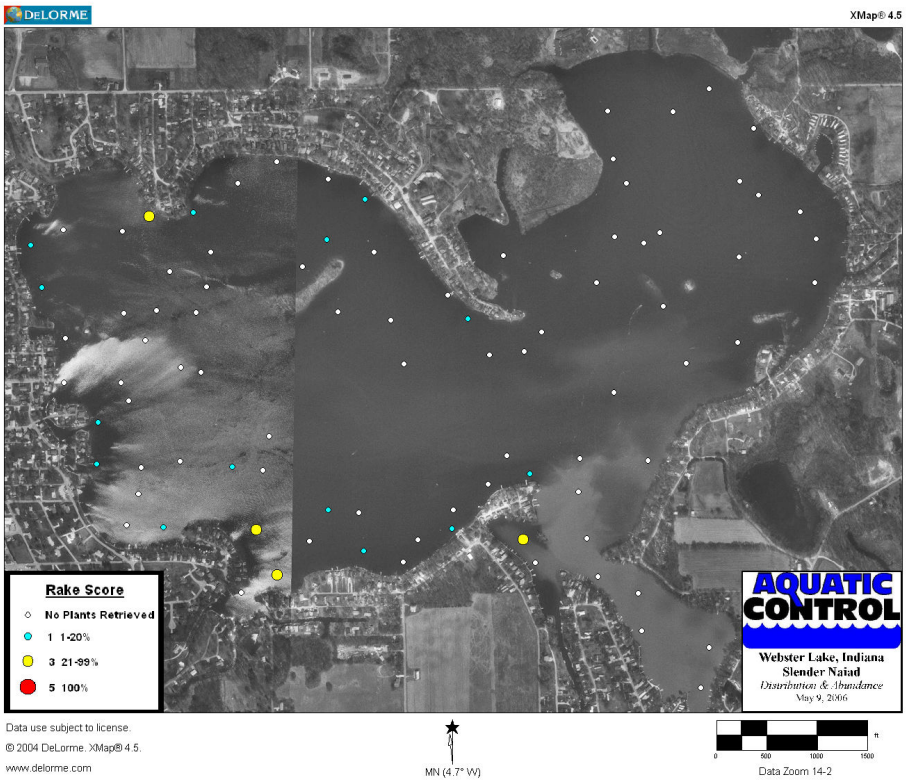


Figure 9. Webster Lake, common naiad distribution and abundance, May 19, 2006.

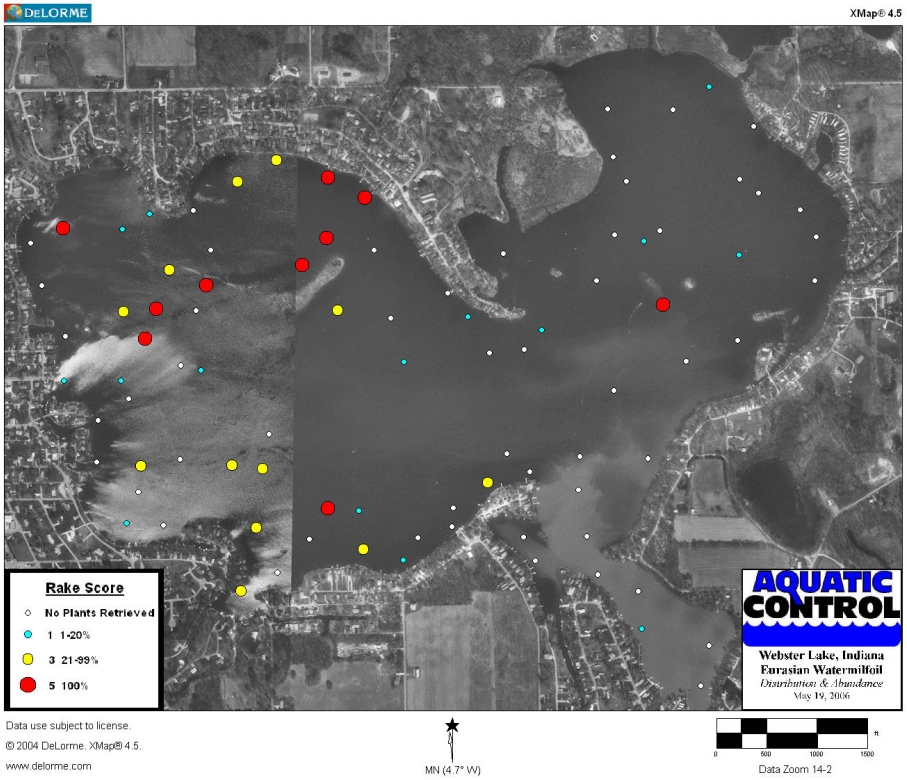


Figure 10. Webster Lake, Eurasian watermilfoil distribution and abundance, May 19, 2006.

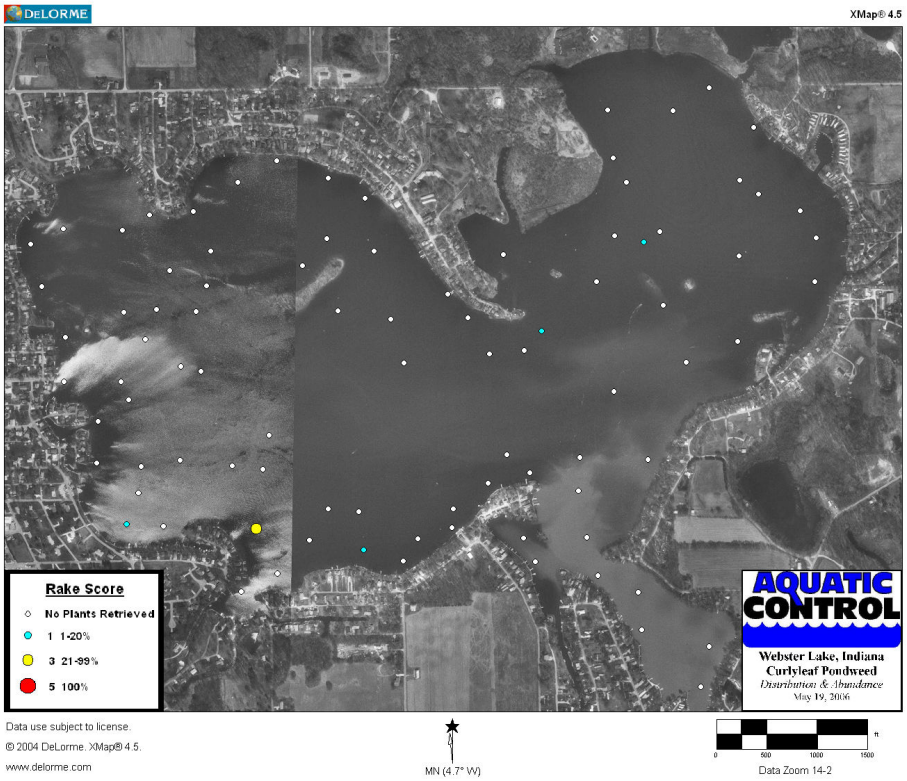


Figure 11. Webster Lake, curlyleaf pondweed distribution and abundance, May 19, 2006.

2.1.3 August survey, Webster Lake

A third and final survey of Webster Lake was completed on August 3, 2006. Sampling consisted of Tier I and Tier II surveys. A Secchi disk reading was taken prior to sampling and was found to be 10.0 feet. The Tier I survey was completed prior to the Tier II survey. The Tier I survey found that plants were present to a maximum of 18 feet. Nineteen species were present within eighteen different plant beds (Table 4 & Figure 12). These beds covered a total area of 471.8 acres. Coontail was the most abundant species. There was a sharp decline in the abundance of Eurasian watermilfoil. Milfoil never received an abundance rating above 1 and was observed in only five of the eighteen beds.

Table 4. Webster Lake Tier I Survey Results, August 13, 2006.

Lake: Webster			**Number of Bed: 18**				**Littoral Max Depth:18**											
Date: 8/3/06			**Number of Species:19**															
Secchi: 10.0			**Littoral Size:471.8**															
Plant Bed I.D.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**
Plant Bed Size (acres)	**2.9**	**9.7**	**56.5**	**13.1**	**1.6**	**15.7**	**1.1**	**9.6**	**0.9**	**5.2**	**5.8**	**19.6**	**21.7**	**0.1**	**0.9**	**3.2**	**1.8**	**302.5**
spatterdock	4	-	-	-	4	-	4	-	4	4	-	-	-	4	4	-	4	-
coontail	2	4	2	2	-	3	1	2	-	-	-	3	2	-	-	-	1	4
giant duckweed	1	1	-	-	-	-		-	-	-	-	-	-	-	-	-	-	1
common duckweed	1	1	-	1	-	-	1	-	-	-	-	-	-	-	-	-	-	1
small pondweed	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Eurasian watermilfoil	-	1	1	-	-	1	-	-	-	-	-	-	-	-	-	-	-	1
slender naiad	-	-	2	3	-	1	-	-	-	-	-	3	3	-	-	2	-	1
largeleaf pondweed	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-		-	1
Chara	-	-	1	-	-	-	-	2	-	-	1	-	3	-	1	4	1	1
sago pondweed	-	-	2	-	-	1	-	1	-	-	1	-	1	-	-	-	-	1
star duckweed	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	1
pickeral weed	-	-	-	-	2	-	-	-	-	-	-	-	-	-	1	-	-	-
white water lily	-	-	-	-	-	1	-	1	2	3	-	-	-	-	-	-	1	-
watermeal	-	-	-	-	-	-	-	-	1		1	-	-	-	-	-	-	1
common bladderwort	-	-	-	-	-	-	-	-	-	1	2	-	-	-	-	-	-	-
variable watermilfoil	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-
Northern watermilfoil	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	1
water stargrass	-	-	-	-	-	-	-	-	-	-	-	2	1	-	-	-	-	1
American elodea	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1

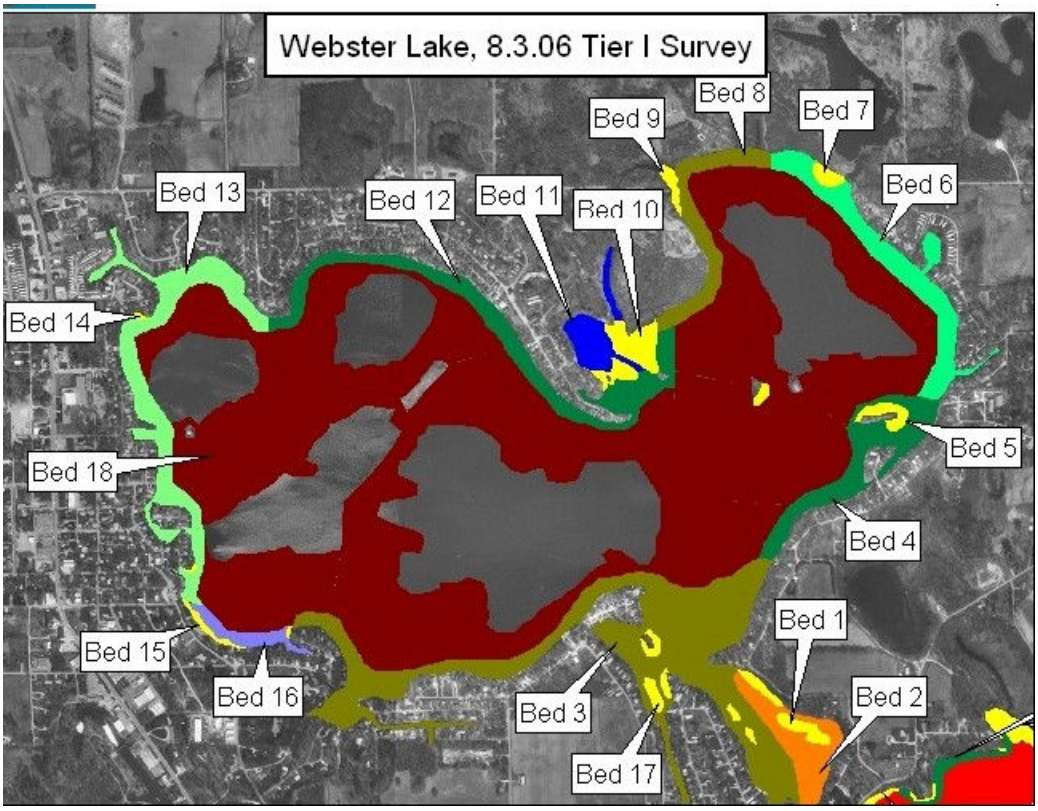


Figure 12. Webster Lake, Tier I plant beds, August 3, 2006.

A Tier II survey was completed following the Tier I survey. This survey was completed using the same 90 sample points that were used in the May Tier II survey. Results of the sampling are listed in Table 5 and overall aquatic vegetation distribution and density is illustrated in Figure 13. Submersed vegetation was present at 74 of the sample sites. A total of 12 species were collected of which 11 of the species were native. The maximum number of species per site was 5 and the mean species collected per site was 1.14.

Table 5. Occurrence and abundance of submersed aquatic plants in Webster Lake, August 3, 2006.

Occurrence and abundance of submersed aquatic plants in Webster Lake								
County:	Kosciusko	Sites with plants:	74	Mean species/site:	1.14			
Date:	8/3/2006	Sites with native plants:	74	Standard error (ms/s):	0.09			
Secchi (ft):	7	Number of species:	12	Mean native species/site:	1.13			
Maximum plant depth (ft):	18	Number of native species:	11	Standard error (mns/s):	0.09			
Trophic status	Mesotrophic	Maximum species/site:	5	Species diversity:	0.57			
Total sites:	90			Native species diversity:	0.56			
All depths (0 to 20 ft)	**Frequency of**	**Rake score frequency per species**				**Plant Dominance**		
Species	**Occurrence**	**0**	**1**	**3**	**5**			
common coontail	71.1	28.9	31.1	5.6	34.4	42.0		
slender naiad	23.3	76.7	12.2	1.1	10.0	7.6		
Chara spp.	10.0	90.0	5.6	1.1	3.3	4.2		
sago pondweed	2.2	97.8	1.1	0.0	1.1	0.4		
Eurasian watermilfoil	1.1	98.9	0.0	0.0	1.1	0.2		
giant duckweed	1.1	98.9	0.0	0.0	1.1	0.2		
small pondweed	1.1	98.9	0.0	0.0	1.1	0.2		
Nitella spp.	1.1	98.9	0.0	1.1	0.0	0.7		
leafy pondweed	1.1	98.9	0.0	0.0	1.1	0.2		
largeleaf pondweed	1.1	98.9	1.1	0.0	0.0	0.2		
water stargrass	1.1	98.9	0.0	0.0	1.1	0.2		
Depth: 0 to 5 ft	**Frequency of**	**Rake score frequency per species**				**Plant Dominance**		
Species	**Occurrence**	**0**	**1**	**3**	**5**			
common coontail	39.1	60.9	21.7	4.3	13.0	13.9		
Chara spp.	30.4	69.6	21.7	0.0	8.7	13.0		
slender naiad	26.1	73.9	17.4	0.0	8.7	7.8		
giant duckweed	4.3	95.7	0.0	0.0	4.3	0.9		
small pondweed	4.3	95.7	0.0	0.0	4.3	0.9		
Nitella spp.	4.3	95.7	0.0	4.3	0.0	2.6		
large leaf pondweed	4.3	95.7	4.3	0.0	0.0	0.9		
sago pondweed	4.3	95.7	4.3	0.0	0.0	0.9		
Depth: 5 to 10 ft	**Frequency of**	**Rake score frequency per species**				**Plant Dominance**		
Species	**Occurrence**	**0**	**1**	**3**	**5**			
common coontail	86.5	13.5	43.2	8.1	35.1	47.6		
slender naiad	24.3	75.7	13.5	0.0	10.8	7.0		
Chara spp.	5.4	94.6	0.0	2.7	2.7	2.2		
water stargrass	2.7	97.3	0.0	0.0	2.7	0.5		
Eurasian watermilfoil	2.7	97.3	0.0	0.0	2.7	0.5		
sago pondweed	2.7	97.3	0.0	0.0	2.7	0.5		
Depth: 10 to 15 ft	**Frequency of**	**Rake score frequency per species**				**Plant Dominance**		
Species	**Occurrence**	**0**	**1**	**3**	**5**			
common coontail	100.0	0.0	22.2	5.6	72.2	80.0		
slender naiad	22.2	77.8	5.6	5.6	11.1	11.1		
leafy pondweed	5.6	94.4	0.0	0.0	5.6	1.1		
Depth: 15 to 20 ft	**Frequency of**	**Rake score frequency per species**				**Plant Dominance**		
Species	**Occurrence**	**0**	**1**	**3**	**5**			
common coontail	41.7	58.3	25.0	0.0	16.7	21.7		
slender naiad	16.7	83.3	8.3	0.0	8.3	3.3		

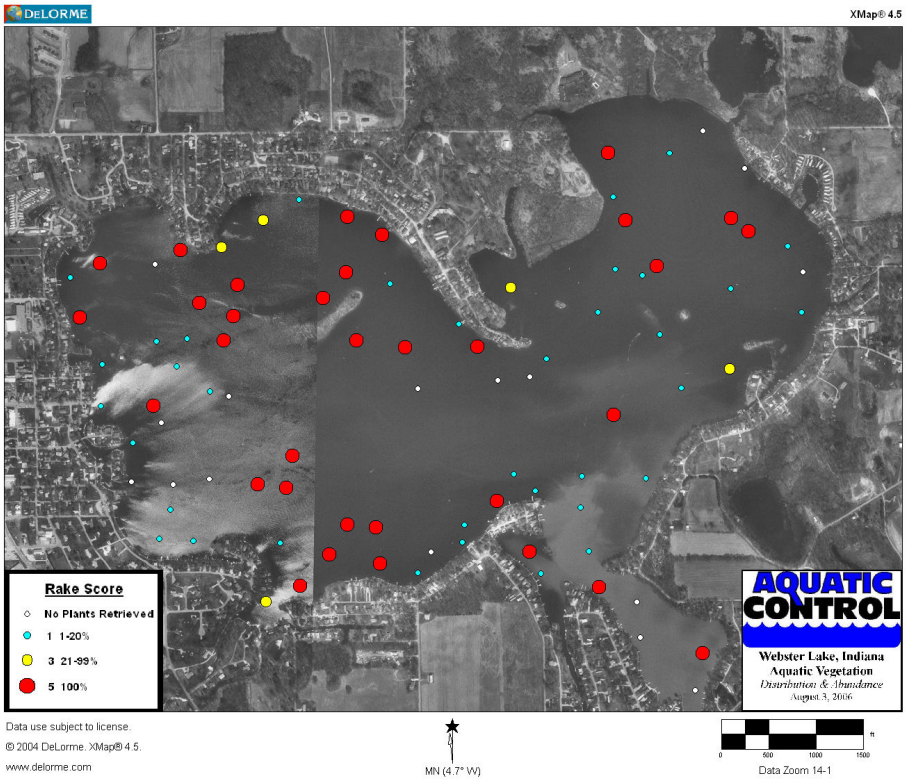


Figure 13. Webster Lake, overall aquatic vegetation distribution and density, August 3, 2006

By far the most abundant species was coontail, which was present at 71.1% of sites (Figure 14). Common naiad decreased in site frequency but was still the second most abundant species and was collected at 23.3% of sites. Eurasian watermilfoil was found at only a single site (Figure 15). Curlyleaf pondweed was not collected during the August sampling.

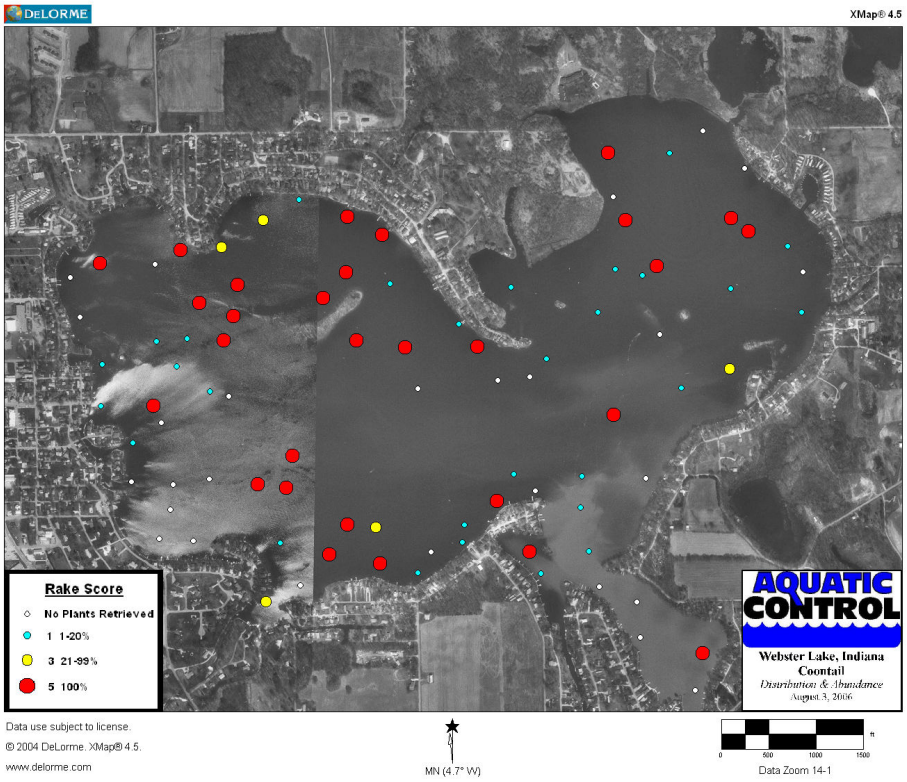


Figure 14. Webster Lake, coontail distribution and abundance, August 3, 2006

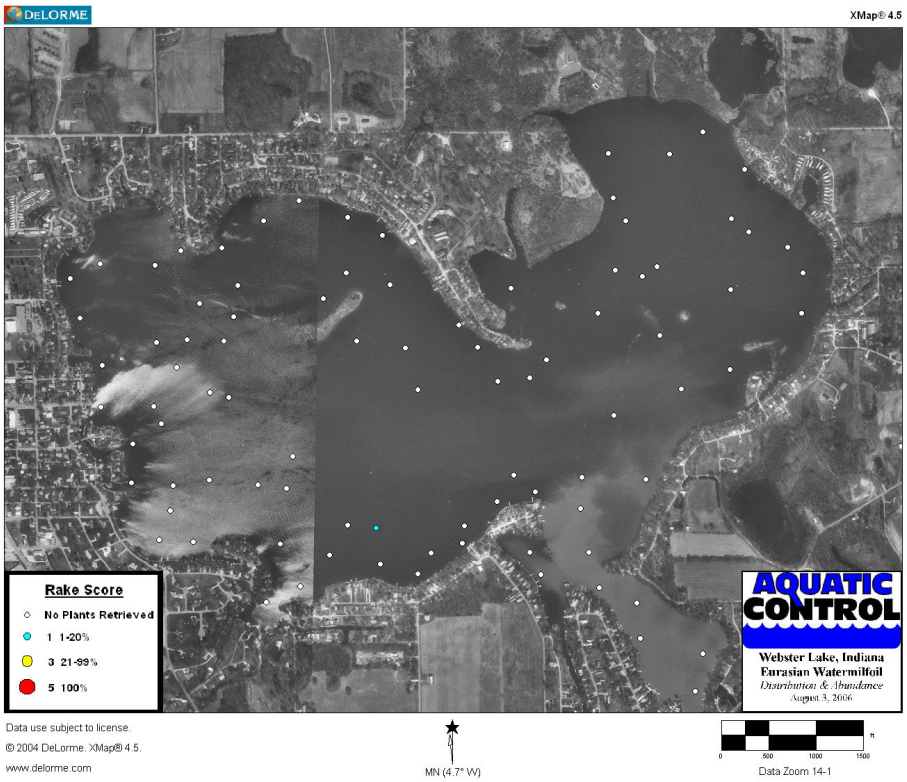


Figure 15. Webster Lake, Eurasian watermilfoil distribution and abundance, August 3, 2006

2.2 Backwater Lake Sampling Results

Backwater Lake was surveyed on three different occasions in 2006. A Tier II survey was completed on April 4, a Tier I survey was completed on May 19, and Tier I and II surveys were both completed on August 3.

2.2.1 April survey, Backwater Lake

On April 4, 2006 a Tier II survey was completed on Backwater Lake. A Secchi disk reading was taken prior to sampling and was found to be at 3.0 feet. Plants were present to a maximum depth of 6 feet. The same 42 sites that were sampled in 2005 were sampled again during the April survey. Results of the sampling are listed in Table 6. Overall aquatic vegetation distribution and density is illustrated in Figure 16. All but one of the sites had aquatic vegetation. Thirty-six of the 42 sites had native vegetation. Only four species were collected of which two of the species were native. The maximum number of species collected at a site was 3 and the mean species per site was 1.64. Mean number of native species per site was 0.88.

Table 6. Occurrence and abundance of submersed aquatic plants in Backwater Lake April 4, 2006.

Occurrence and abundance of submersed aquatic plants in Backwater Lake						
County:	Kosciusko	Sites with plants:	41	Mean species/site:	1.64	
Date:	4/4/2006	Sites with native plants:	36	Standard error (ms/s):	0.11	
Secchi (ft):	3	Number of species:	4	Mean native species/site:	0.88	
Maximum plant depth (ft):	6	Number of native species:	2	Standard error (mns/s):	0.05	
Trophic status	Mesotrophic	Maximum species/site:	3	Species diversity:	0.62	
Total sites:	42			Native species diversity:	0.05	
All depths (0 to 10 ft)	**Frequency of**	**Rake score frequency per species**				**Plant Dominance**
Species	**Occurrence**	**0**	**1**	**3**	**5**	
common coontail	85.7	14.3	19.0	40.5	26.2	46.7
curlyleaf pondweed	42.9	57.1	16.7	21.4	4.8	8.6
Eurasian watermilfoil	33.3	66.7	4.8	11.9	16.7	19.0
American elodea	2.4	97.6	2.4	0.0	0.0	0.5
Depth: 0 to 5 ft	**Frequency of**	**Rake score frequency per species**				**Plant Dominance**
Species	**Occurrence**	**0**	**1**	**3**	**5**	
common coontail	87.5	12.5	20.0	40.0	27.5	47.5
curlyleaf pondweed	42.5	57.5	15.0	22.5	5.0	8.5
Eurasian watermilfoil	35.0	65.0	5.0	12.5	17.5	20.0
American elodea	2.5	97.5	2.5	0.0	0.0	0.5
Depth: 5 to 10 ft	**Frequency of**	**Rake score frequency per species**				**Plant Dominance**
Species	**Occurrence**	**0**	**1**	**3**	**5**	
common coontail	50.0	50.0	0.0	50.0	0.0	30.0
curlyleaf pondweed	50.0	50.0	50.0	0.0	0.0	10.0

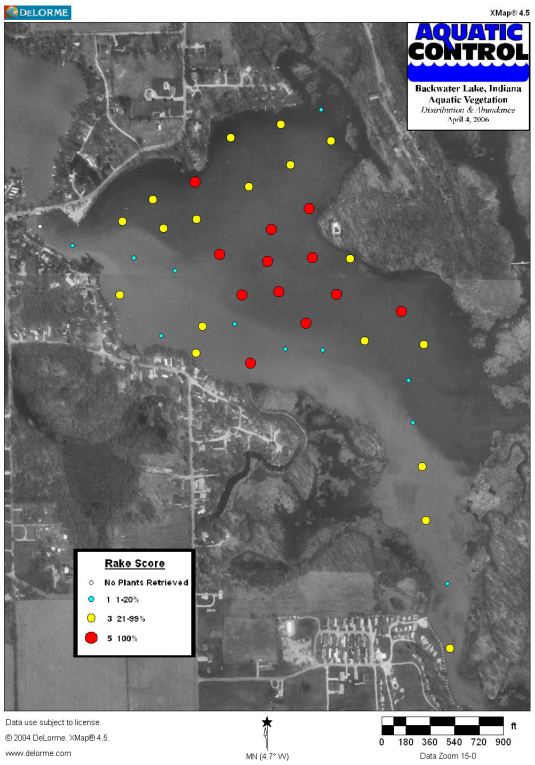


Figure 16. Backwater Lake, overall aquatic vegetation distribution and density, April 4, 2006

The most frequently occurring species was coontail, which was present at 85.7% of sites. Location and density of this species is illustrated in Figure 17. Curlyleaf pondweed ranked second in frequency of occurrence (42.9%) followed by Eurasian watermilfoil (33.3%). Location and density of these two species is illustrated in Figure 18 and 19. Elodea (*Elodea canidensis*) was the only other species collected and was found at only a single site.

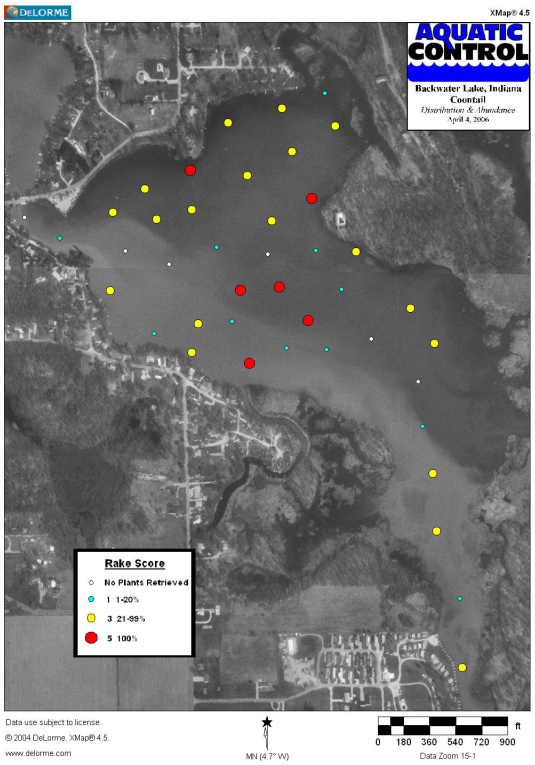


Figure 17. Backwater Lake, coontail distribution and abundance, April 4, 2006

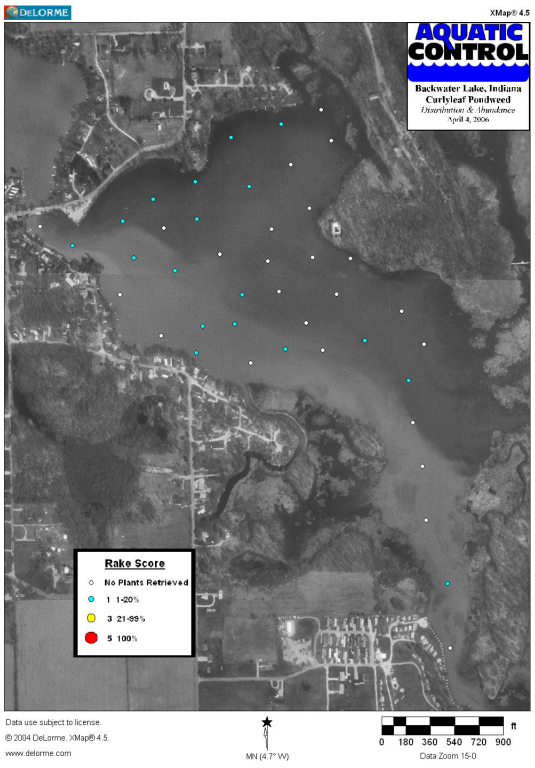


Figure 18. Backwater Lake, curlyleaf pondweed distribution and abundance, April 4, 2006

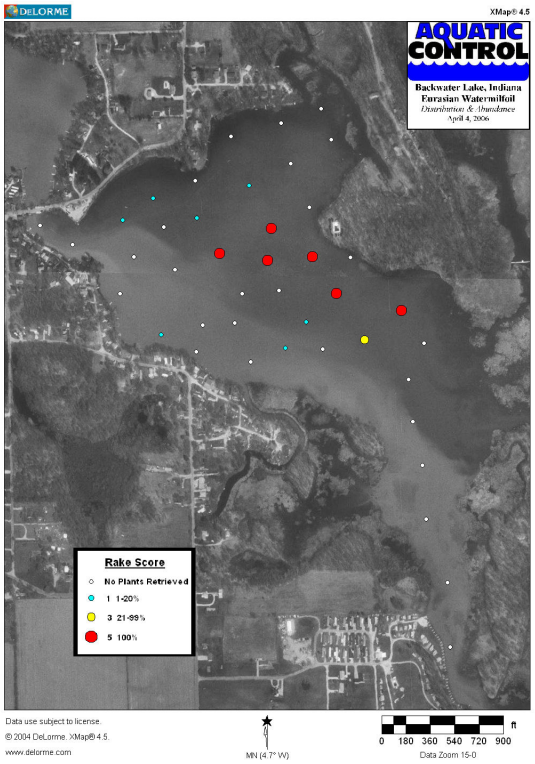


Figure 19. Backwater Lake, Eurasian watermilfoil distribution and abundance, April 4, 2006

2.2.2 May Survey, Backwater Lake

On May 19, 2006 a Tier I survey was completed on Backwater Lake. A Secchi disk reading was taken prior to sampling and was found to be 3.0 feet. A total of 11 plant beds were defined (Table 7 & Figure 20). These beds were composed of 9 different species. The entire area of Backwater Lake was capable of growing submersed vegetation. Curlyleaf pondweed was one of the most abundant species and had reached the surface in the northern two-thirds of the lake. Plant beds 1 and 4 contained the densest beds of curlyleaf pondweed. These beds encompassed an area of 90.2 acres. Eurasian watermilfoil was most abundant in plant bed 4, which was located on the eastern shore of Backwater Lake and encompassed an area of 9.7 acres.

Table 7. Backwater Lake Tier I Survey Results, May 19, 2006.

Lake:Backwater			**Number of beds:11**					**Max littoral depth:6**			
Date:5/19/06			**Number of species:9**								
Secchi:3.0			**Littoral zone size:190**								
Plant Bed I.D.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**
Plant Bed Size (acres)	**80.5**	**2.1**	**3.6**	**9.7**	**1.2**	**2.2**	**16.2**	**3.9**	**10.2**	**0.2**	**0.2**
curlyleaf pondweed	4	2	1	4	2	2	2	1		2	1
common coontail	2	1		1			2				
Eurasian watermilfoil	1	1		2	1		1				
duckweed	1		1	1	1	1	1	1	1	1	
watermeal	1			1							
spatterdock	1	4	4		4	4	1	4	4	4	4
white waterlily	1		1			1	1	1	1	1	1
Chara			1								1
flatstem pondweed							2	1			

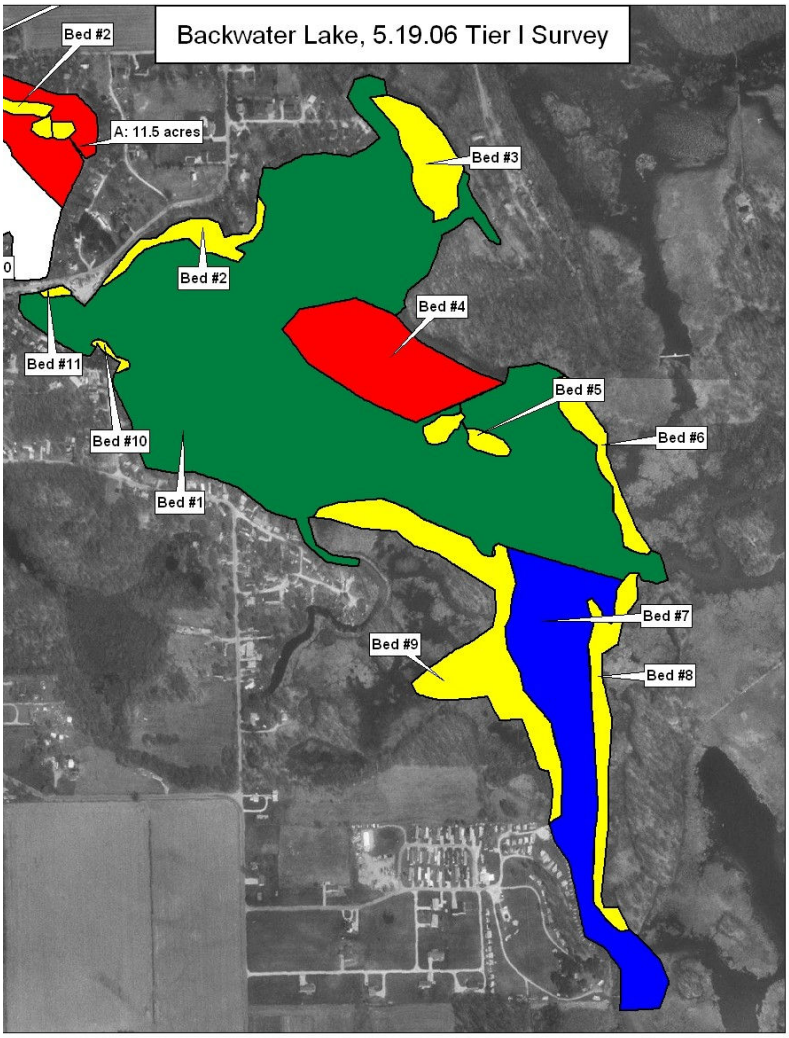


Figure 20. Backwater Lake, Tier I plant beds, May 19, 2006.

2.2.3 August Survey, Backwater Lake

On August 3, 2006 a third round of surveying took place on Backwater Lake. A Tier I and Tier II survey were completed. A Secchi disk reading was taken prior to sampling and was found to be 4.0 feet. The Tier I survey was completed first and found a total of 9 plant beds. These beds were composed of 16 different species and included the entire area of Backwater Lake. Eurasian watermilfoil and common coontail were the two most abundant submersed plant species. Eurasian watermilfoil had spread since the May survey and now formed a dense surface mat over a large percentage of the lake. Milfoil received an abundance rating of 4 in plant bed 1 which encompassed an 80.7-acre area (Table 8 and Figure 21).

Table 8. Backwater Lake Tier I Survey Results, August 3, 2006.

Lake: Backwater					**Number of species:16**				
Date: 8/3/06					**Littoral zone size: 190**				
Secchi:4.0					**Littoral zone max depth:6**				
Number of beds:9									
Plant Bed I.D.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Plant Bed Size (acres)	**80.7**	**1.0**	**0.2**	**7.6**	**1.6**	**35.7**	**12.5**	**4.8**	**2.6**
Eurasian watermilfoil	4	2	2	1	2	-	-	2	2
coontail	3	2	2	3	2	1	3	2	3
American elodea	1	-	-	-	-	-	-	-	-
common duckweed	1	1	1	1	1	-	1	1	1
star duckweed	1	1	1	1	1	-	1	1	1
giant duckweed	1	1	1	1	1	-	1	1	1
watermeal	1	1	1	1	1	1	1	1	1
spatterdock	1	4	4	-	4	4	-	4	-
Nitella	1	-	-	-	-	1	2	-	-
common cattail	-	1	-	-	-	1	-	-	-
button bush	-	1	-	-	-	-	-	-	-
white water lily	-	-	1	-	1	1	-	1	-
purple loosestrife	-	-	-	-	-	1	-	-	-
arrow arum	-	-	-	-	-	1	-	-	-
swamp rose mallow	-	-	-	-	-	1	-	-	-
pickeral weed	-	-	-	-	-	1	-	-	-

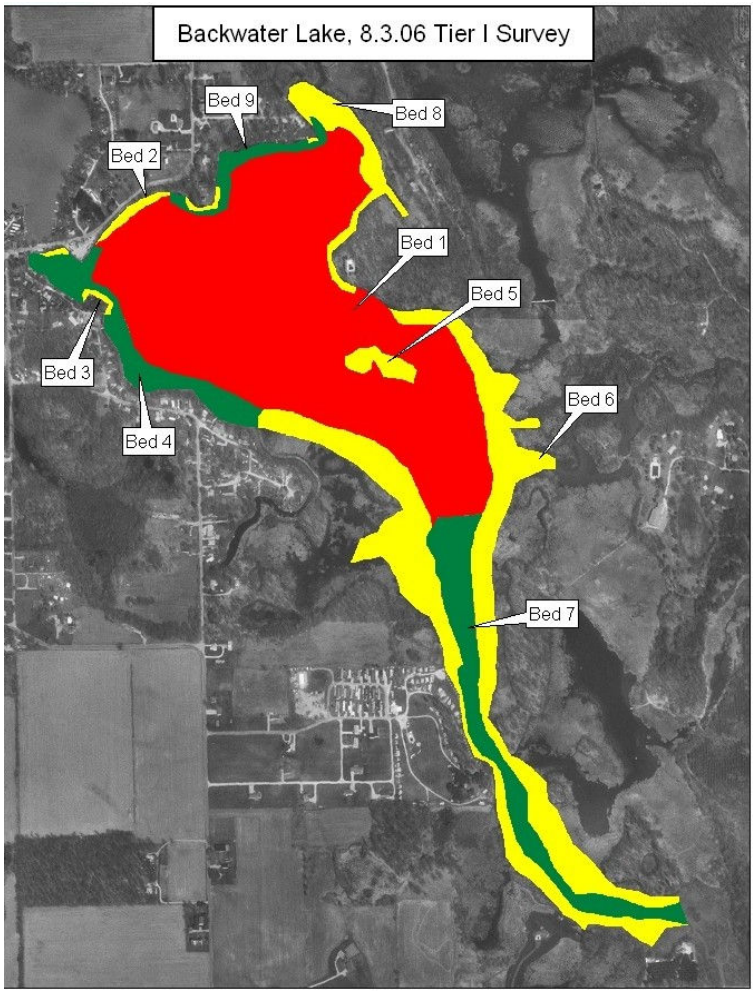


Figure 21. Backwater Lake, Tier I plant beds, August 3, 2006.

A Tier II survey was completed on Backwater Lake following the Tier I survey. The new LARE Tier II sampling protocol was used in this survey. A total of 50 sites were sampled (40 sites 0-5 feet and 10 sites 5-10 feet). All sites contained plants and 47 of the sites contained native vegetation. A total of 12 species were collected of which 10 were native (floating vegetation was counted in the plant sampling, this will not be included next season). The maximum number of species per site was 8 and the mean number of species per site was 3.40 for all species and 2.72 for native species. Sampling data is summarized in Table 9 and overall aquatic plant abundance and distribution is illustrated in Figure 22.

Table 9. Occurrence and abundance of submersed aquatic plants in Backwater Lake August 3, 2006.

Occurrence and abundance of submersed aquatic plants in Backwater Lake						
County:	Kosciusko	Sites with plants:	50	Mean species/site:	3.40	
Date:	8/3/2006	Sites with native plants:	47	Standard error (ms/s):	0.25	
Secchi (ft):	4	Number of species:	12	Mean native species/site:	2.72	
Maximum plant depth (ft):	7	Number of native species:	10	Standard error (mns/s):	0.22	
Trophic status	Mesotrophic	Maximum species/site:	8	Species diversity:	0.85	
Total sites:	50			Native species diversity:	0.81	

All depths (0 to 10 ft)	Frequency	Rake score frequency per species				Plant Dominance
Species	of	0	1	3	5	
common coontail	88.0	12.0	18.0	6.0	64.0	60.0
Eurasian watermilfoil	64.0	36.0	4.0	2.0	58.0	48.8
duckweed	52.0	48.0	2.0	0.0	50.0	10.4
watermeal	52.0	48.0	4.0	0.0	48.0	10.4
giant duckweed	28.0	72.0	0.0	0.0	28.0	5.6
star duckweed	26.0	74.0	4.0	0.0	22.0	5.2
American elodea	20.0	80.0	0.0	0.0	20.0	5.6
Nitella	14.0	86.0	6.0	2.0	6.0	5.2
curlyleaf pondweed	4.0	96.0	0.0	0.0	4.0	0.8
sago pondweed	2.0	98.0	0.0	0.0	2.0	0.4
slender naiad	2.0	98.0	0.0	0.0	2.0	0.4
flatstem pondweed	2.0	98.0	0.0	0.0	2.0	0.4

Depth: 0 to 5 ft	Frequency	Rake score frequency per species				Plant Dominance
Species	of	0	1	3	5	
common coontail	90.5	9.5	21.4	4.8	64.3	58.1
Eurasian watermilfoil	59.5	40.5	4.8	2.4	52.4	46.2
watermeal	50.0	50.0	4.8	0.0	45.2	10.0
duckweed	50.0	50.0	2.4	0.0	47.6	10.0
giant duckweed	26.2	73.8	0.0	0.0	26.2	5.2
star duckweed	23.8	76.2	4.8	0.0	19.0	4.8
American elodea	19.0	81.0	0.0	0.0	19.0	5.7
Nitella sp.	14.3	85.7	7.1	2.4	4.8	5.7
slender naiad	2.4	97.6	0.0	0.0	2.4	0.5
flatstemmed pondweed	2.4	97.6	0.0	0.0	2.4	0.5

Depth: 5 to 10 ft	Frequency	Rake score frequency per species				Plant Dominance
Species	of	0	1	3	5	
Eurasian watermilfoil	87.5	12.5	0.0	0.0	87.5	62.5
common coontail	75.0	25.0	0.0	12.5	62.5	70.0
duckweed	62.5	37.5	0.0	0.0	62.5	12.5
watermeal	62.5	62.5	0.0	0.0	62.5	12.5
giant duckweed	37.5	72.5	0.0	0.0	37.5	7.5
star duckweed	37.5	62.5	0.0	0.0	37.5	7.5
curlyleaf pondweed	25.0	75.0	0.0	0.0	25.0	5.0
American elodea	25.0	75.0	0.0	0.0	25.0	5.0
sago pondweed	12.5	87.5	0.0	0.0	12.5	2.5
Nitella sp.	12.5	77.5	0.0	0.0	12.5	2.5

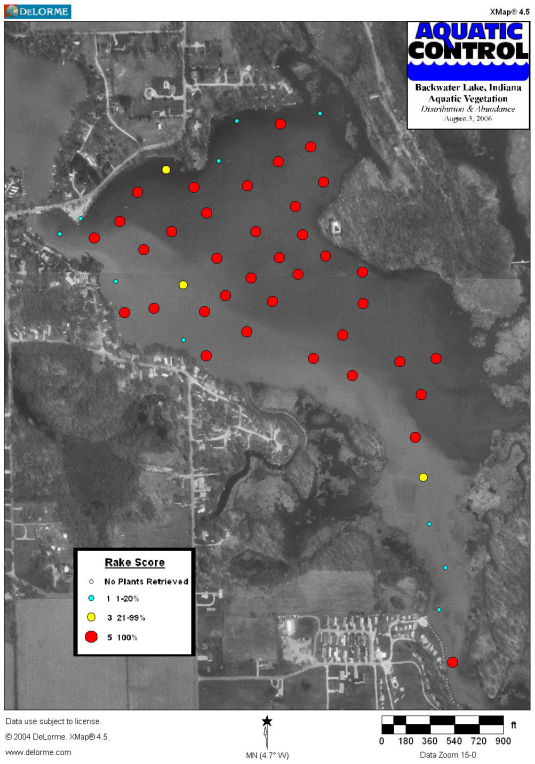


Figure 22. Backwater Lake, aquatic vegetation distribution and abundance, August 3, 2006.

Common coontail was the most frequently occurring species (88%). Distribution and abundance of common coontail is illustrated in Figure 23. Eurasian watermilfoil had significantly increased in frequency of occurrence since the April survey and now occurred at 59.5% of sites (Figure 24). Elodea increased in abundance and was found at 20.0% of sites. Curlyleaf pondweed was only present at 4.0% of sites (Figure 25). This was a significant decrease from the spring survey and was likely due to the unique life history of this species. Common naiad, sago pondweed and flatstem pondweed were the only other submersed species collected.

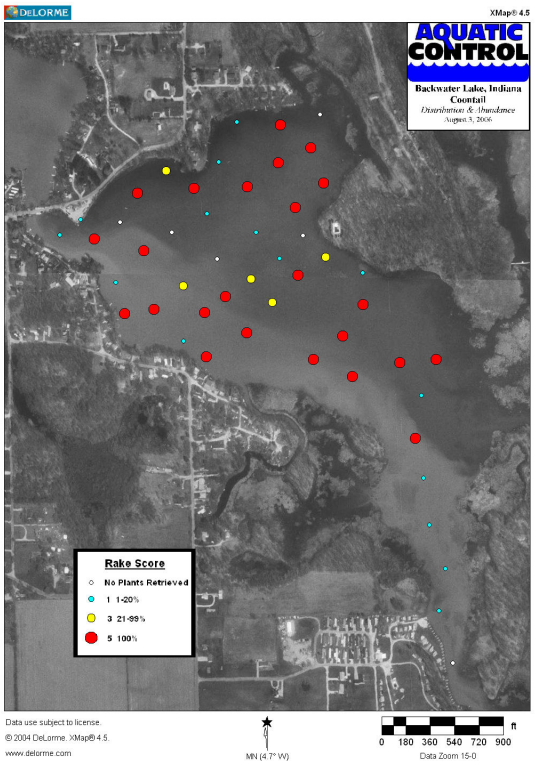


Figure 23. Backwater Lake, coontail distribution and abundance, August 3, 2006

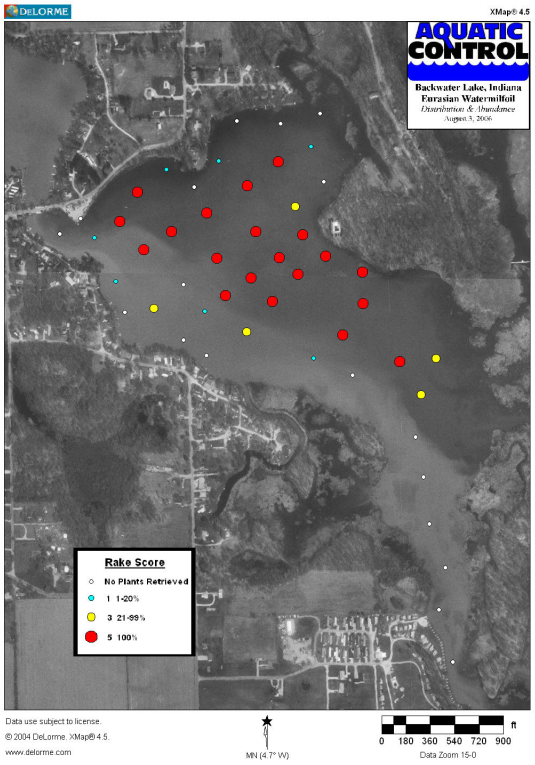


Figure 24. Backwater Lake, Eurasian watermilfoil distribution and abundance, August 3, 2006

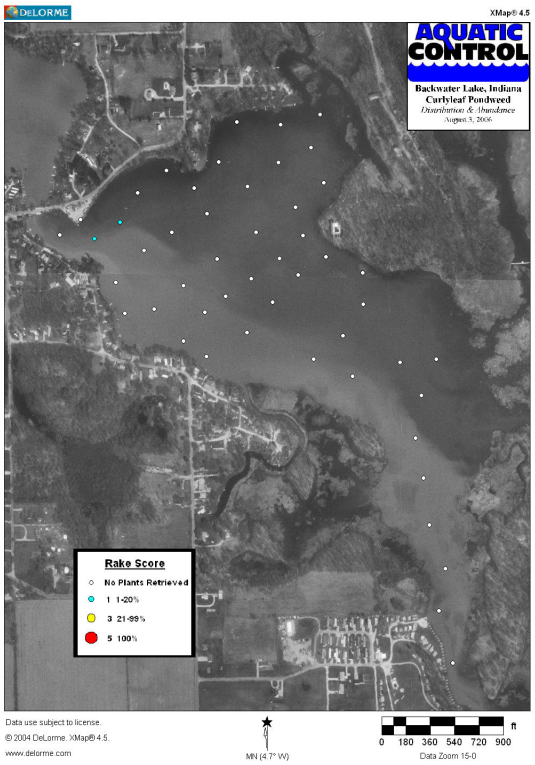


Figure 25. Backwater Lake, curlyleaf pondweed distribution and abundance, August 3, 2006

2.3 Plant Sampling Discussion

Backwater Lake was sampled along with Webster Lake due to the belief that the Eurasian watermilfoil was originating in Backwater. Due to the differences in the two ecosystems we sampled them separately and will discuss the sampling results separately.

2.3.1 Webster Lake Sampling Discussion

The goal of the 2006 management actions was to decrease the abundance and density of nuisance exotic vegetation and maintain the abundance and density of native vegetation. Preserving the native vegetation is especially important in Webster Lake since it is one of the best lakes for muskellunge fishing in the state of Indiana (it is believed that muskellunge perform better in lakes with dense vegetation). IDNR has set a goal of maintaining 80% or greater plant coverage in the littoral zone of Webster Lake, and according to the 2006 sampling results this goal was achieved. The early season curlyleaf and selective milfoil treatments appeared to have no negative effects on native vegetation (Figure 26 & 27). The most informative data can be gleaned by comparing the 2003, 2004, August 2005, and August 2006 data because these surveys were all completed in the late summer. There was a slight decrease in some of the metrics that may have been the result of changing the sampling points to include more deep-water areas.

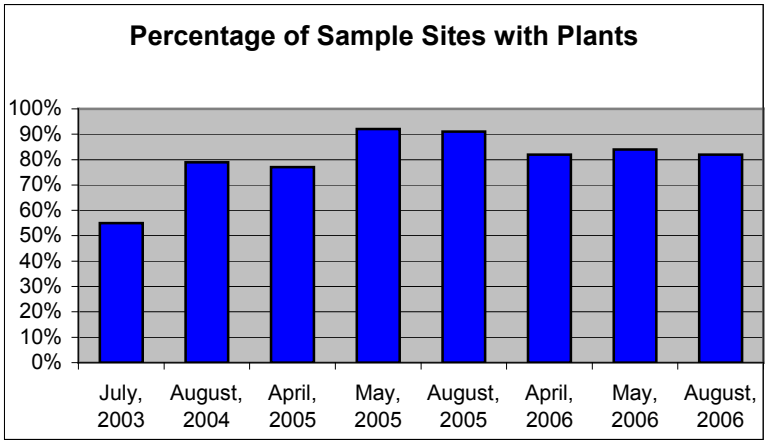


Figure 26. Webster Lake, comparison of the percentage of sample sites with plants in the last eight surveys.

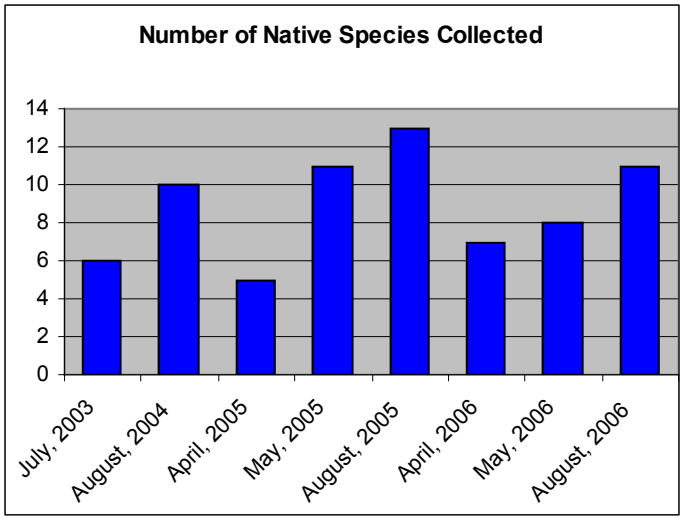


Figure 27. Webster Lake, comparison of number of native species collected in the last eight surveys.

One of the primary goals of the plan is the control of Eurasian watermilfoil. The April survey indicated a decrease in milfoil frequency when compared to the April 2005 data. However, there was a sharp increase in milfoil frequency by the May survey. Treatment was completed after the May survey and the milfoil frequency dropped significantly by the August survey (Figure 28).

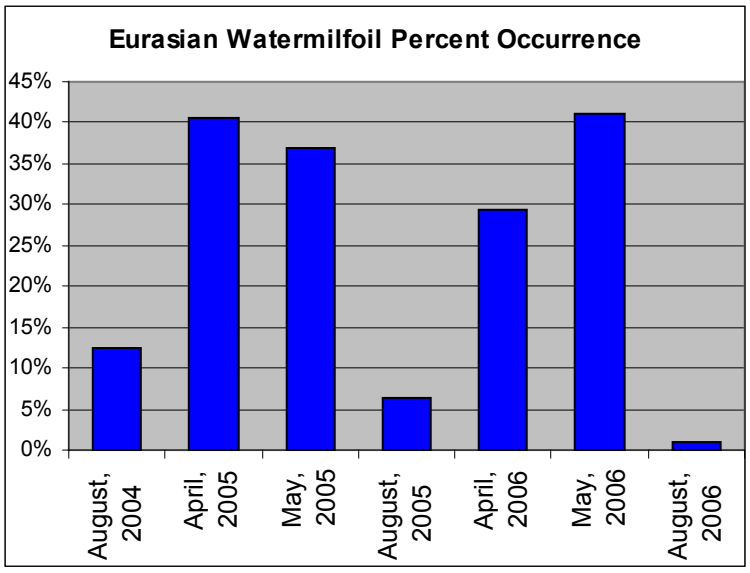


Figure 28. Webster Lake, Eurasian watermilfoil percent occurrence in the last seven surveys.

Curlyleaf pondweed has become a serious problem in Webster Lake. This season an early season treatment was completed in an attempt to control the problem. This treatment significantly reduced curlyleaf pondweed abundance (Figure 29). Due to the presence of reproductive structures called turions, this treatment will have to be completed for two to three more years in order to exhaust the turion supply.

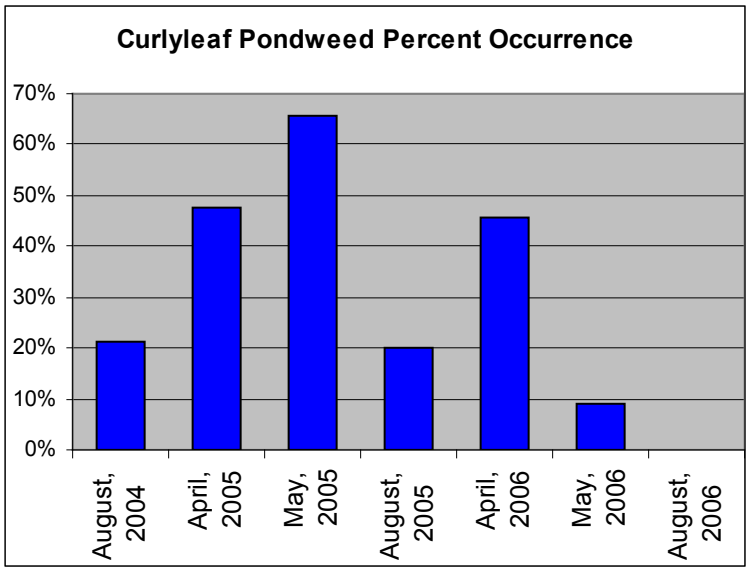


Figure 29. Webster Lake, curlyleaf pondweed percent occurrence in the last seven surveys.

Water clarity has continued to improve on Webster Lake over the last several seasons. The reason for the increased clarity is not for certain (many theorize that the improvements are due to a combination of zebra mussels, improved watershed practices, or increases in plant density). Figure 30 illustrates the Secchi measurements taken in the last eight surveys.

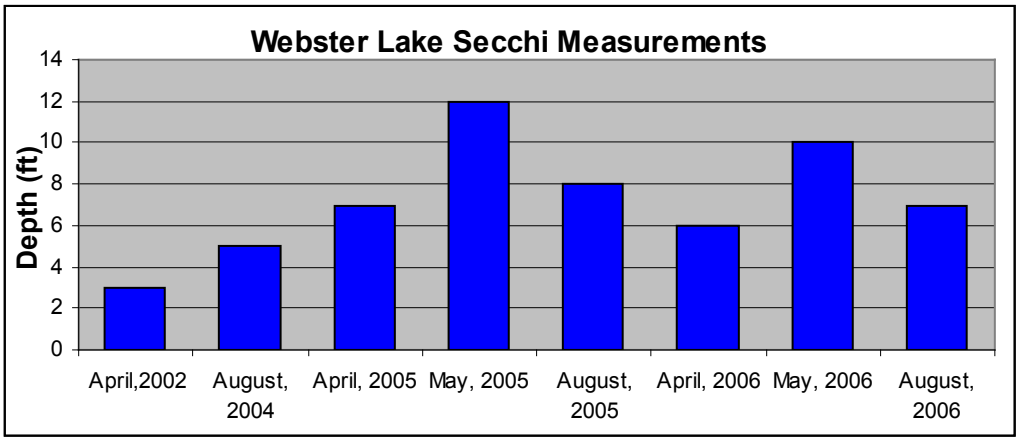


Figure 30. Webster Lake, Secchi measurement in the last eight surveys.

2.3.2 Backwater Lake Sampling Discussion

Discussion of Backwater Lake is included in the "Webster Lake AVMP" due to the belief that Webster Lake's Eurasian watermilfoil infestation originates in or above this lake. Eurasian watermilfoil was not treated in Backwater Lake due to the abundance of milfoil in Webster (funds intended for Backwater Lake were used to treat milfoil in Webster). Milfoil spread rapidly in Backwater Lake following the April survey (Figure 31). Steps will need to be taken next season in order to reduce the abundance of this species.

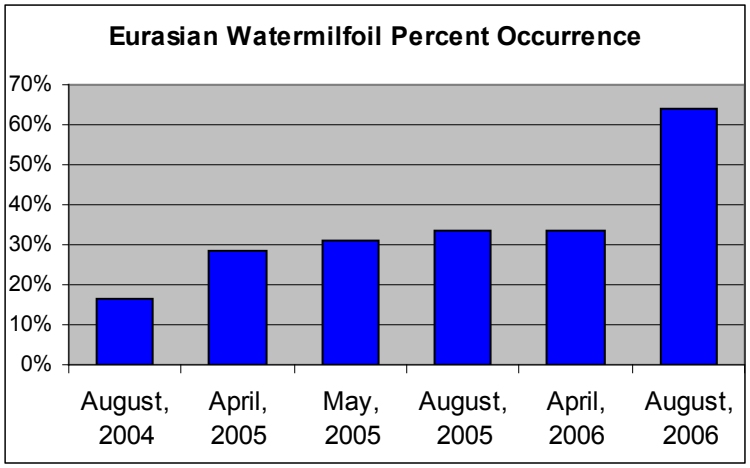


Figure 31. Backwater Lake, Eurasian watermilfoil percent occurrence in the last six surveys.

Curlyleaf pondweed continues to be a problem in Backwater Lake. Backwater Lake was not treated for curlyleaf pondweed this season. There was a reduction in abundance by the summer survey, but this was likely due to the life history of this plant (Figure 32). Steps should be taken to reduce the abundance of this nuisance exotic species.

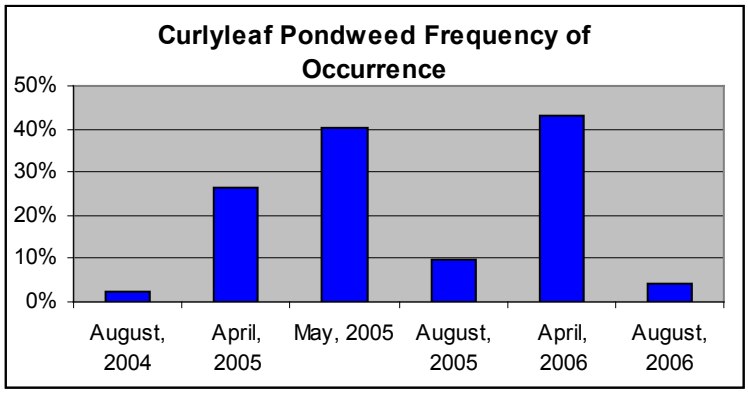


Figure 32. Backwater Lake, Curlyleaf pondweed percent occurrence in the last six survey.

It appears that the spatterdock beds in the upper end of Backwater Lake have declined. This is based on visual observations over the last several seasons. It is not clear as to why these beds have declined. This potential problem should be closely monitored in future surveys (more detailed Tier I surveys should allow for better documentation of the changes in the spatterdock beds, this season's Tier I surveys were very detailed, but there is nothing to compare it to).

3.0 2006 VEGETATION CONTROL

In general, the goals of the vegetation management plan are to control nuisance aquatic species, with a focus on exotic nuisance plants, while preserving and enhancing native vegetation. Two treatments were completed that focused on selective control of invasive exotic species. One treatment was completed in order to reduce nuisance conditions caused mainly by native species in high-use area.

On April 19, 2006 121.5 acres of curlyleaf pondweed was treated on Webster Lake (Figure 34). The blue areas on Figure 33 were treated with 1.0 ppm of Aquathol K and the red areas were treated with 1.5 ppm. The reason for the higher rates was that Eurasian watermilfoil was present in the red areas. This treatment was completed early in the season for two reasons. The first reason was to control curlyleaf pondweed before it produced reproductive structures. The second reason is that there are very few native species present early in the season, so native damage would be minimized. Treatment areas were mapped out following the Tier II survey which was completed on April 4. The treatment was very successful at reducing the abundance of curlyleaf pondweed in 2006, but two to three more seasons of this type of treatment should be completed in order to exhaust the turion supply (turions can last for several years in the lake bottom and are not controlled with herbicide treatments, so control of the plants before they produce turions will eventually exhaust the turion supply).

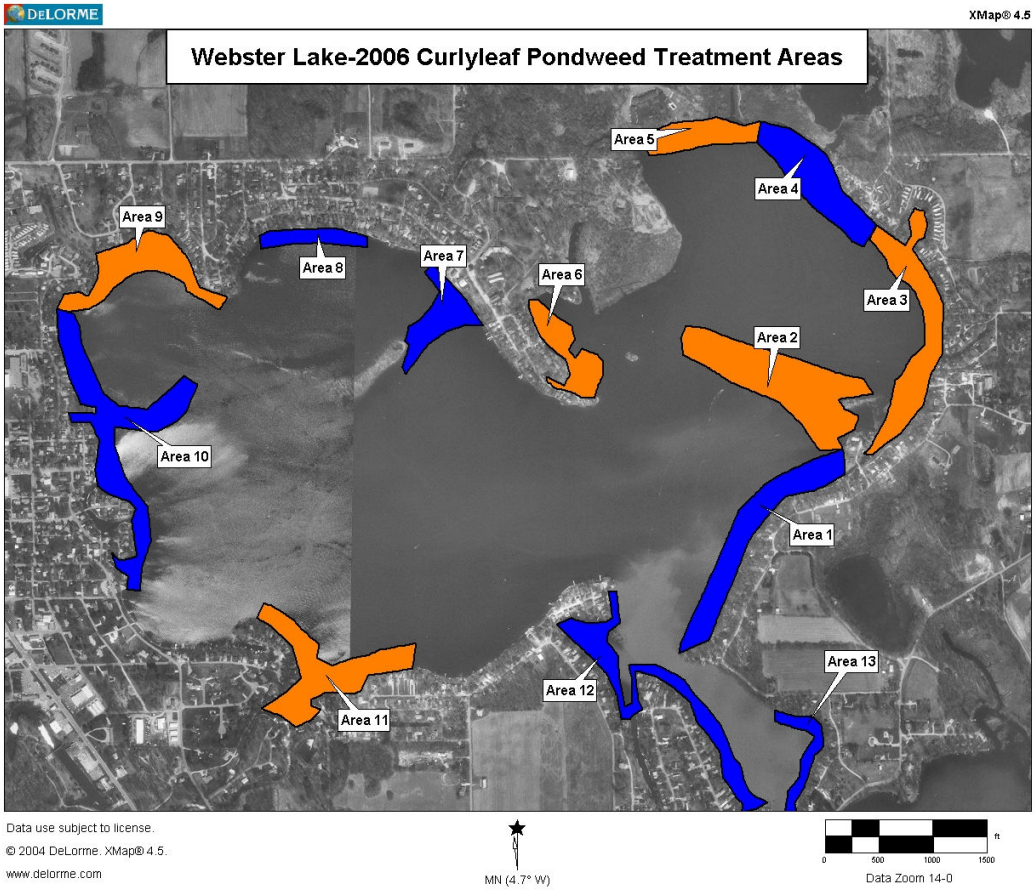


Figure 33. Webster Lake curlyleaf pondweed treatment areas, April 19, 2006.

On May 24, 2006, forty-six acres of Eurasian watermilfoil was treated on Webster Lake (Figure 34). These areas were mapped out during the May Tier I survey. It was determined during the Tier I survey that 108 acres required treatment. However, LARE was only funding treatment of 46 acres, so only the densest areas of milfoil were treated. Control was achieved in the treated areas and for an unknown reason the milfoil outside of the treated areas also disappeared (see August sampling data).

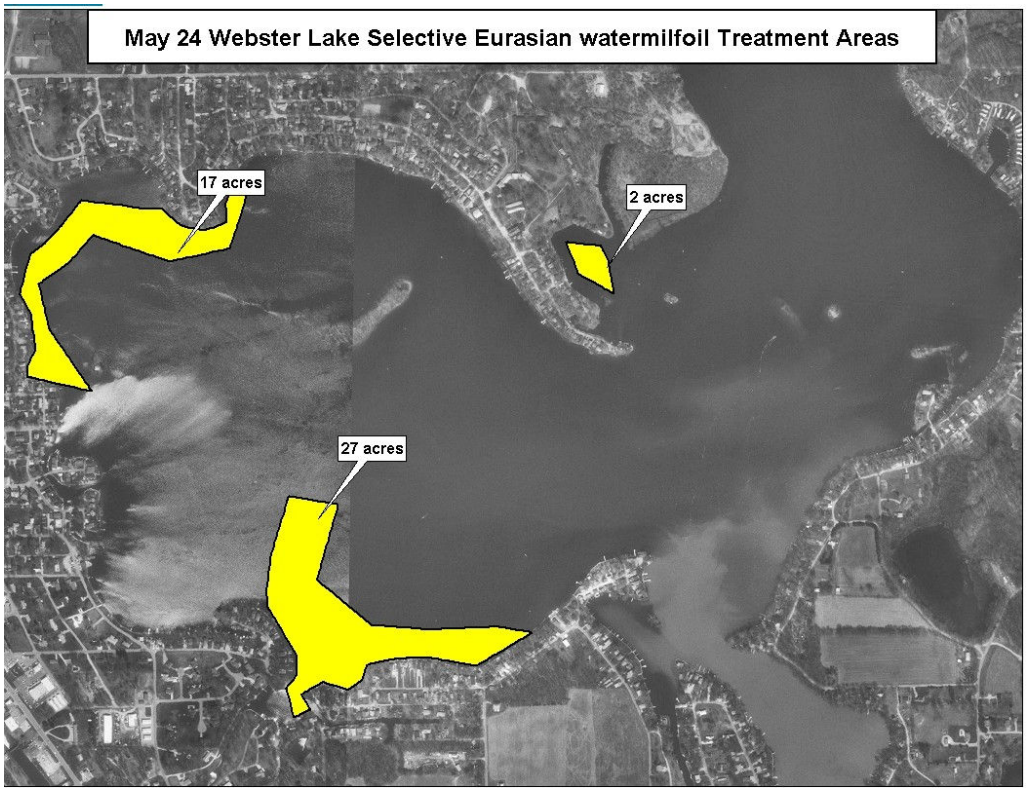


Figure 34. Webster Lake, Eurasian watermilfoil treatment areas, April 26, 2006.

A shoreline treatment was completed to Webster and Backwater Lake on June 13, 2006. This treatment was designed to reduce nuisance conditions in high-use areas. The primary species targeted in Webster Lake were common coontail and common naiad. Curlyleaf pondweed, Eurasian watermilfoil, and common coontail were the primary species targeted in Backwater Lake. A combination of Reward (active ingredient diquat) and Komeen (active ingredient copper) were used in the treatment. A total of 40 acres was treated in Webster Lake and 3.9 acres was treated on Backwater Lake (Figure 35 and 36). The shoreline treatments were very effective at reducing nuisance conditions in both lakes. This treatment was moved back two weeks, compared to last year, and provided longer-term control of nuisance species throughout the busy summer season.

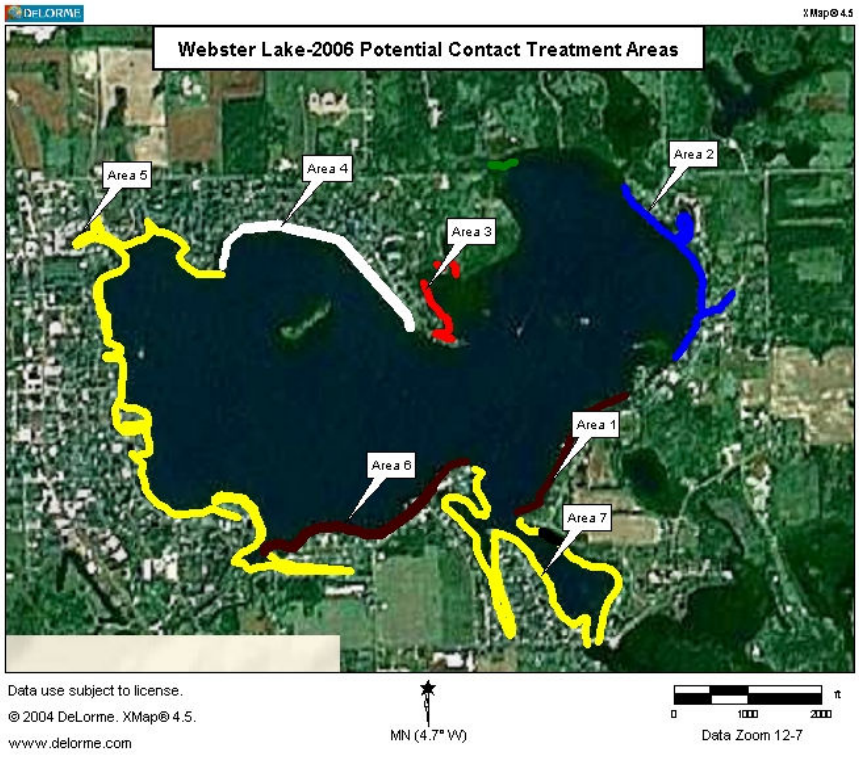


Figure 35. Webster Lake shoreline treatment areas, June 13, 2006.

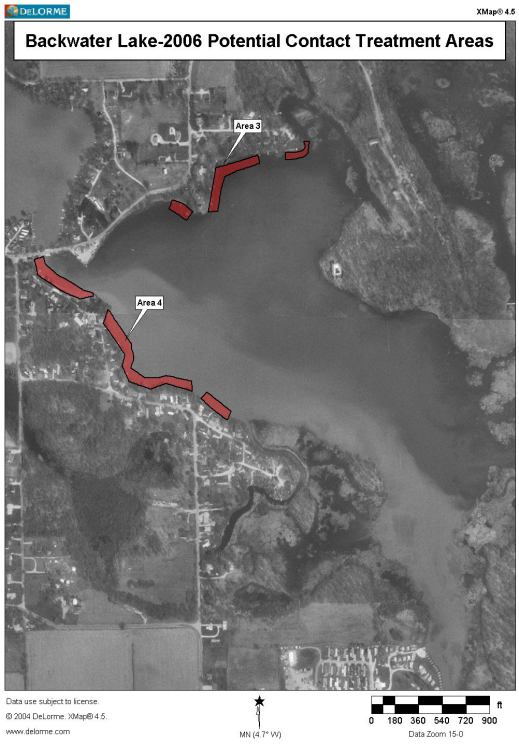


Figure 36. Backwater Lake shoreline treatment areas, June 13, 2006.

4.0 ACTION PLAN AND BUDGET UPDATE

An early season curlyleaf pondweed treatment was completed on Webster Lake in 2006. This treatment was funded by the WLCA. The early season curlyleaf treatment was very effective at reducing nuisance conditions and had little to no negative effects on native vegetation. In order for this treatment to be effective for long term control it should be completed for 2-3 more seasons. It is recommended that a maximum of 125 acres of curlyleaf pondweed be treated in a similar fashion in 2007. Treatment areas should be mapped out in early April and application should be made with 0.75-1.25 ppm of Aquathol K in mid to late April. The maximum cost of this treatment would be around $37,500. We recommend that the WLCA request $37,500 from LARE for treatment of curlyleaf pondweed in Webster Lake. LARE did not fund this treatment last season, but given the success of the 2006 treatment they should consider funding for the 2007 season.

Forty-six acres of Eurasian watermilfoil was treated with Renovate herbicide in 2006. As previously mentioned, there was approximately 108 acres of milfoil that should have been treated. Virtually all of the milfoil was gone by the August survey and very little was seen during a visual survey completed on October 5. It is not clear why the milfoil dropped out of the untreated areas. It is also not clear how much milfoil will return in 2007. Due to the presence of extensive milfoil areas in Backwater Lake, we believe there will be areas that require treatment. This may range from as little as 20 acres to as many as 100 acres. We recommend that the WLCA request $25,000 from LARE for treatment of 60 acres of Eurasian watermilfoil in Webster Lake with Renovate herbicide.

LARE funds were not available for treatment of Backwater Lake. This was unfortunate because Eurasian watermilfoil and curlyleaf pondweed reached levels that severely impaired the use of Backwater Lake as illustrated in Figure 37. Steps need to be taken next season to correct this problem. Since Eurasian watermilfoil and curlyleaf pondweed occur in the same areas it is our recommendation that these species be treated with a combination of Aquathol K and 2,4-D. The use of these two herbicides in combination appears to have synergistic effects so that lower than normal rates of each can be used. A treatment of 1 ppm of Aquathol K along with 0.5 ppm of liquid 2,4-D should effectively control both species. This treatment should be completed in mid to late April in order to control curlyleaf pondweed prior to turion production. The lower half of Backwater Lake is the most used and also the most impaired area, so treatment should focus on this section (Figure 38). This area encompasses approximately 75 acres. It is recommended that that WLCA request $25,500 for treatment of 75 acres of curlyleaf pondweed and Eurasian watermilfoil in Backwater Lake. This treatment should be completed for 3-4 consecutive seasons.

Figure 37. Picture of Eurasian watermilfoil bed in the north end of Backwater Lake, August 3, 2006.

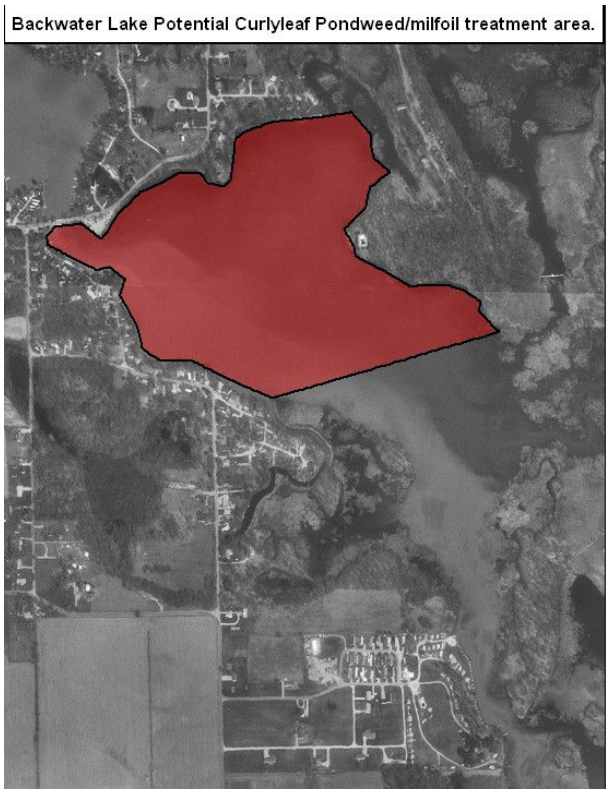


Figure 38. Backwater Lake, potential curlyleaf pondweed and Eurasian watermilfoil treatment areas.

It will also be necessary to complete shoreline contact herbicide treatments in order to relieve residents of nuisance conditions caused by native vegetation. These treatments should not extend beyond 100 feet from the shoreline and should include only the areas treated this past season. Treatments should be completed in mid to late June much like they were in 2006.

Along with herbicide applications, it will be important to continue monitoring the vegetation in a similar fashion. Three Tier II surveys should be sufficient to keep track of any major changes in the plant population and make appropriate management decisions. These surveys should be completed near the same time as they were in 2006. Tier I surveys should be replaced with treatment maps prior to applications with the exception of Backwater Lake. A Tier I survey should be completed on Backwater in August in order to assess a possible reduction in spatterdock abundance.

A budget for the proposed applications and sampling is provided in Table 10. The budget includes the estimated cost of treatments that should be eligible for funding by LARE and cost for treatments funded solely by the WLCA. The budget extends for the next four seasons. **It is recommended that WLCA requests $25,500 for a combination treatment to 75 acres curlyleaf pondweed and Eurasian watermilfoil in Backwater Lake, $37,500 for treatment of up to 125 acres of curlyleaf pondweed in Webster Lake, $25,000 for treatment of up to 60 acres of milfoil in Webster Lake, and $6,000 for plant sampling and plan updates on both lakes.** These figures are higher than recommendations in the previous plan update due to the expansion of curlyleaf pondweed and Eurasian watermilfoil in Backwater Lake. When making the funding decision, IDNR should keep in mind that the grant request includes vegetation control in two lakes.

Table 10. Webster Lake budget estimate for the next three seasons.

	2006	2007	2008	2009
Early season curlyleaf pondweed treatment (125 acres)	$37,500	$37,500	$37,500	-
Renovate treatment for selective milfoil control	$25,500?	$25,500?	$25,500?	$25,500?
Developed shoreline treatment (including algae not to exceed 80 acres)	$15,000	$15,500	$16,000	16,500
Combination Curlyleaf and milfoil treatment on Backwater Lake	$25,000	$25,000	$25,000	$25,000
Plant Sampling and plan update	$6,000	$6,000	$6,000	$6,000
Total LARE Funding Request:	**$94,000**	**$94,000**	**$94,000**	**$56,500**
Total Funded Strictly by Association if LARE funds milfoil and curlyleaf treatments (does not include 10% match):	$15,000	$15,500	$16,000	$16,500

5.0 PUBLIC INVOLVEMENT

A public meeting was held at the Webster Lake Community Center on October 5, 2006. The meeting was designed to educate lake users on the benefits of aquatic vegetation, 2006 vegetation controls, and the future of aquatic plant management on Webster Lake. The meeting was also used to gain input from lake users concerning their perceptions of aquatic vegetation and satisfaction or dissatisfaction concerning vegetation control techniques. Approximately 24 individuals were in attendance of which 19 filled out a lake use survey. One hundred percent of those surveyed owned property on the lakes and 79% had lived on the lakes for more than 10 years. Ninety-five percent used the lake for boating, 74% fishing, 84% swimming, and 37% use the lake for irrigation. Survey questions concerning problems on the lakes indicated that 37% thought there were too many aquatic plants, 47% believed dredging was needed, 5% believed there was a fish population problem, 47% too many jet skis, 26% over-use by non-residents, 16% pier funneling, 10% poor water quality, 5% too many boats with access, and 5% thought there was too much fishing. Questions concerning aquatic vegetation indicated that 52% believed vegetation interfered with their lake use, 52% believed there were nuisance levels of aquatic plants, 90% believed vegetation effected their property value, and 100% were in favor of continuing vegetation control.

Another topic discussed at the public meeting was the recent discovery of hydrilla (*Hydrilla verticillata*) in Lake Manitou. Hydrilla is an invasive aquatic species that was originally discovered in Florida in the 1960's. There are many characteristics of hydrilla that make it a threat to Indiana waterways. This species can grow in lower light conditions than most native species, grows faster than most native species, and can shade out other species by forming a surface canopy. Hydrilla can be easily confused with native elodea. The best way to distinguish hydrilla from native elodea is that hydrilla typically has five leaves along each whorl along with visible serrated edges along the leaf margin (Figure 39). What makes controlling the spread of hydrilla difficult is the fact that it can be spread by fragments. **That is why it is vitally important that lake users remove all plants and sediment from their boats when entering and leaving Webster Lake.** More information about controlling the spread of hydrilla can be found at www.protectyourwaters.net.

It will be important for the Association to continue to inform users of proper land management practices that have minimal negative impacts on the lakes water quality. This may include discouraging fertilizer use, not disposing of yard waste in or near the lake, and allowing natural vegetation to grow along the shoreline as opposed to concrete seawalls. Residents should also continue to be informed of the benefits of native vegetation on fish populations and water quality. These items can be reinforced in Association newsletters, websites, and at Association meetings.

Figure 39. Illustration of hydrilla on the left compared to native elodea on the right. Hydrilla typically contains five toothed leaves per whorl while native elodea typically has three leaves per whorl and the teeth are not visible on the leaves (Illustrations provided by Applied Biochemist).

6.0 APPENDIX UPDATE

6.1 2006 Plant Sampling Data

August 3 Webster Lake Tier II Data

Lake	Latitude	Longitude	RAKE	MYSP2	SPPO	CEDE4	CH?AR	NAFL	POPE6	POPU7	POFO3	POAM	ZODU	NI?TE
Webster Lake	41.31736	-85.6709	0											
Webster Lake	41.31846	-85.6706	5		1	5				1				
Webster Lake	41.31992	-85.6732	0											
Webster Lake	41.3214	-85.675	1			1								
Webster Lake	41.32536	-85.6741	5			5								
Webster Lake	41.32351	-85.6729	1					1						
Webster Lake	41.32614	-85.6715	1			1								
Webster Lake	41.3267	-85.6696	3			3								
Webster Lake	41.32768	-85.6723	1				1					1		
Webster Lake	41.3294	-85.673	1			1								
Webster Lake	41.32968	-85.6724	5			5								
Webster Lake	41.32901	-85.6696	1			1								
Webster Lake	41.32832	-85.6668	1			1								
Webster Lake	41.3295	-85.6668	0											
Webster Lake	41.33025	-85.6674	1			1								
Webster Lake	41.33069	-85.6689	5			5								
Webster Lake	41.33107	-85.6695	5			5								
Webster Lake	41.3325	-85.669	0											
Webster Lake	41.33358	-85.6706	0											
Webster Lake	41.33295	-85.6719	1			1								
Webster Lake	41.33297	-85.6743	5			5								
Webster Lake	41.33167	-85.6741	1				1							
Webster Lake	41.33101	-85.6736	5			5								
Webster Lake	41.32957	-85.674	1			1								
Webster Lake	41.32832	-85.6747	1			1								
Webster Lake	41.32906	-85.678	3			1								3
Webster Lake	41.32698	-85.6767	1			1		1						
Webster Lake	41.32645	-85.6773	0											
Webster Lake	41.32636	-85.6786	0											
Webster Lake	41.32734	-85.6793	5			5								
Webster Lake	41.32798	-85.6801	1			1								
Webster Lake	41.32731	-85.6821	5			5								
Webster Lake	41.32611	-85.6816	0											
Webster Lake	41.32753	-85.684	5			5		5						
Webster Lake	41.32915	-85.6827	1			1								
Webster Lake	41.33057	-85.683	5			5								
Webster Lake	41.32949	-85.6844	5			5								
Webster Lake	41.32875	-85.6853	5			5								
Webster Lake	41.33112	-85.6843	5			5					1			
Webster Lake	41.33159	-85.6862	1			1								
Webster Lake	41.33101	-85.6876	3			3		1						
Webster Lake	41.33022	-85.6892	3			3								
Webster Lake	41.32914	-85.6886	5			5		3						
Webster Lake	41.32822	-85.6887	5			5								
Webster Lake	41.32752	-85.6891	5			5								
Webster Lake	41.32861	-85.6901	5			5		1						
Webster Lake	41.33013	-85.6908	5			5								
Webster Lake	41.32972	-85.6918	0											
Webster Lake	41.32749	-85.6917	1			1								
Webster Lake	41.32676	-85.6909	1			1								
Webster Lake	41.32603	-85.6897	1			1		1						
Webster Lake	41.3259	-85.6889	0											
Webster Lake	41.32757	-85.6905	1			1								
Webster Lake	41.32976	-85.6939	5			5								
Webster Lake	41.32933	-85.6951	1				1	1	1					
Webster Lake	41.32819	-85.6947	5				5							
Webster Lake	41.32682	-85.6938	1			1								
Webster Lake	41.32561	-85.6939	1			1								
Webster Lake	41.32562	-85.6918	5			5			1					
Webster Lake	41.32513	-85.6915	0											
Webster Lake	41.32453	-85.6926	1			1								
Webster Lake	41.32341	-85.6927	0											
Webster Lake	41.32332	-85.6911	0											
Webster Lake	41.32349	-85.6897	0											
Webster Lake	41.3226	-85.6912	1				1	1						
Webster Lake	41.32177	-85.6916	1				1							
Webster Lake	41.3217	-85.6903	1					1						
Webster Lake	41.32335	-85.6878	5			5								
Webster Lake	41.32417	-85.6865	5			5		1						
Webster Lake	41.32325	-85.6867	5			5								
Webster Lake	41.32164	-85.6869	1			1		1						
Webster Lake	41.31993	-85.6875	3			3	1							
Webster Lake	41.32042	-85.6862	5			0	5	0						
Webster Lake	41.32132	-85.685	5			5		1						
Webster Lake	41.32217	-85.6844	5			5								
Webster Lake	41.32211	-85.6833	5	1		3	3	5					1	
Webster Lake	41.32106	-85.6831	5			5		1						
Webster Lake	41.32076	-85.6817	1			1		1						
Webster Lake	41.32137	-85.6811	0											
Webster Lake	41.32167	-85.6799	1			1								
Webster Lake	41.32216	-85.6798	1			1								
Webster Lake	41.32287	-85.6786	5			5								
Webster Lake	41.32363	-85.6779	1			1								
Webster Lake	41.32314	-85.6771	1					1						
Webster Lake	41.32357	-85.6753	1			1		1						
Webster Lake	41.32266	-85.6754	1			1		1						
Webster Lake	41.32139	-85.6773	5			5								
Webster Lake	41.32074	-85.6769	1			1								
Webster Lake	41.32037	-85.6746	5					5						
Webster Lake	41.3189	-85.6731	0											

August 3 Backwater Lake Tier II Data

Lake	Date	Latitude	Longitude	Site	Depth	RAKE	MYSP2	POCR3	CEDE4	NAFL	POPE6	SPPO	LETR	ELCA7	POZO	WOCO	LEMI	NI7TE
Backwater	8/3/06	41.31625	-85.6699	91	5.0	1			1									
Backwater	8/3/06	41.31594	-85.6704	92	5.0	1			1									
Backwater	8/3/06	41.31586	-85.6695	93	6.0	5	1	1	5									
Backwater	8/3/06	41.3162	-85.6688	94	6.0	5	5	1								1	1	
Backwater	8/3/06	41.31679	-85.6683	95	4.0	5	5		5				1			1	1	
Backwater	8/3/06	41.31724	-85.6676	96	3.0	3	1		3									
Backwater	8/3/06	41.31689	-85.6668	97	4.0	5			5							1		
Backwater	8/3/06	41.31742	-85.6662	98	4.0	1	1		1							1		
Backwater	8/3/06	41.31822	-85.6657	99	3.0	1			1									
Backwater	8/3/06	41.31817	-85.6645	100	3.0	5			5					1				
Backwater	8/3/06	41.31837	-85.6634	101	2.0	1										1		
Backwater	8/3/06	41.3177	-85.6637	102	4.0	5	1		5									
Backwater	8/3/06	41.31741	-85.6646	103	5.0	5	5		5									
Backwater	8/3/06	41.31692	-85.6654	104	4.0	5	5		5			1					1	
Backwater	8/3/06	41.31638	-85.6665	105	5.0	5	5		1									
Backwater	8/3/06	41.31599	-85.6674	106	6.0	5	5				1	1	1				1	
Backwater	8/3/06	41.31563	-85.6682	107	7.0	5	5		5							1		1
Backwater	8/3/06	41.31499	-85.6689	108	3.0	1	1		1									
Backwater	8/3/06	41.31437	-85.6687	109	4.0	5			5	1			1					
Backwater	8/3/06	41.31445	-85.6679	110	5.0	5	3		5				1			1	1	
Backwater	8/3/06	41.31492	-85.6671	111	6.0	3			3									
Backwater	8/3/06	41.31546	-85.6662	112	5.0	5	5											
Backwater	8/3/06	41.31599	-85.6652	113	4.0	5	5		1							1	1	
Backwater	8/3/06	41.3165	-85.6641	114	3.0	5	3		5			1		1		1	1	
Backwater	8/3/06	41.31699	-85.6633	115	4.0	5			5							1	1	
Backwater	8/3/06	41.31593	-85.6639	116	3.0	5	5										1	
Backwater	8/3/06	41.31547	-85.6645	117	5.0	5	5		1			1				1	1	
Backwater	8/3/06	41.31506	-85.6653	118	5.0	5	5		3					1			1	
Backwater	8/3/06	41.3147	-85.666	119	6.0	5	5		5			1				1	1	
Backwater	8/3/06	41.31438	-85.6665	120	6.0	5	1		5				1	1		1	1	
Backwater	8/3/06	41.31381	-85.6671	121	4.0	1			1									
Backwater	8/3/06	41.31349	-85.6665	122	3.0	5			5									
Backwater	8/3/06	41.31397	-85.6654	123	6.0	5	3		5			1	1	1		1	1	
Backwater	8/3/06	41.31458	-85.6647	124	3.0	5	5		3			1				1	1	
Backwater	8/3/06	41.31513	-85.664	125	5.0	5	5		5							1	1	
Backwater	8/3/06	41.3155	-85.6633	126	4.0	5	5		3			1				1	1	
Backwater	8/3/06	41.31518	-85.6623	127	3.0	5	5		1							1	1	
Backwater	8/3/06	41.31454	-85.6623	128	4.0	5	5		5			1				1	1	
Backwater	8/3/06	41.31391	-85.6628	129	4.0	5	5		5			1	1	1		1	1	
Backwater	8/3/06	41.31344	-85.6636	130	4.0	5	1		5				1	1		1	1	
Backwater	8/3/06	41.31309	-85.6626	131	4.0	5			5			1	1	1		1	1	
Backwater	8/3/06	41.31337	-85.6613	132	3.0	5	5		5							1	1	
Backwater	8/3/06	41.31344	-85.6603	133	2.0	5	3		5			1		1		1	1	
Backwater	8/3/06	41.31271	-85.6607	134	2.0	5	3		1			1	1	5	1	1	1	
Backwater	8/3/06	41.31185	-85.6609	135	4.0	5			5				1					1
Backwater	8/3/06	41.31104	-85.6607	136	5.0	3			1									3
Backwater	8/3/06	41.31009	-85.6605	137	5.0	1			1				1					1
Backwater	8/3/06	41.30922	-85.6601	138	5.0	1			1									1
Backwater	8/3/06	41.30836	-85.6603	139	4.0	1			1				1				1	1
Backwater	8/3/06	41.30732	-85.6599	140	4.0	5						1				1		5

6.2 2007 Vegetation Control Permits

2007 Webster Lake Permit

APPLICATION FOR AQUATIC VEGETATION CONTROL PERMIT
State Form 26727 (R / 11-03)
Approved State Board of Accounts 1987
☐ Whole Lake ☒ Multiple Treatment Areas
Check type of permit

INSTRUCTIONS: Please print or type information

FOR OFFICE USE ONLY
License No.
Date Issued
Lake County

Return to: Page 1 of 6
DEPARTMENT OF NATURAL RESOURCES
Division of Fish and Wildlife
Commercial License Clerk
402 West Washington Street, Room W273
Indianapolis, IN 46204

FEE: $5.00

Applicant's Name	Lake Assoc. Name	
Webster Lake Conservation Association	Webster Lake Conservation Association	
Rural Route or Street: 85 EMS W19		Phone Number: 574-372-7291
City and State: North Webster, IN		ZIP Code: 46555
Certified Applicator (if applicable)	Company or Inc. Name	Certification Number
Rural Route or Street		Phone Number
City and State		ZIP Code

Lake (One application per lake)	Nearest Town	County
Webster Lake	North Webster	Kosciusko
Does water flow into a water supply		☐ Yes ☒ No

Please complete one section for *EACH* treatment area. Attach lake map showing treatment area and denote location of any water supply intake.

Treatment Area # 1	LAT/LONG or UTM's Center of bed @ N41.32367 W85.67219		
Total acres to be controlled 2.5	Proposed shoreline treatment length (ft) 2300	Perpendicular distance from shoreline (ft) 50	
Maximum Depth of Treatment (ft) 8	Expected date(s) of treatment(s) mid June		

Treatment method: ☒ Chemical ☐ Physical ☐ Biological Control ☐ Mechanical

Based on treatment method, describe chemical used, method of physical or mechanical control and disposal area, or the species and stocking rate for biological control. Reward and Nautique or Komeen

Plant survey method: ☒ Rake ☒ Visual ☐ Other (specify)

Aquatic Plant Name	Check if Target Species	Relative Abundance % of Community
Coontail	X	20
Curlyleaf pondweed	x	20
Eurasian watermilfoil	x	20
Chara	x	5
Flatstem Pondweed	x	10
Naiad	X	20
Largeleaf pondweed		3
Water Stargrass		2

Treatment Area # 2	LAT/LONG or UTM's Center of Bed at N41.32786 W85.67519		
Total acres to be controlled 4.6	Proposed shoreline treatment length (ft) 4000	Perpendicular distance from shoreline (ft) 50	
Maximum Depth of Treatment (ft) 8	Expected date(s) of treatment(s) mid June		
Treatment method: [X] Chemical [ ] Physical	[ ] Biological Control	[ ] Mechanical	
Based on treatment method, describe chemical used, method of physical or mechanical control and disposal area, or the species and stocking rate for biological control. Reward and Nautique or Komeen			
Plant survey method: [X] Rake [x] Visual [ ] Other (specify)			

Aquatic Plant Name	Check if Target Species	Relative Abundance % of Community
Coontail	x	20
Curlyleaf pondweed	x	20
Eurasian watermilfoil	x	20
Largeleaf pondweed		5
Flatstem pondweed	x	5
Naiad	x	20
Chara		5
Water Stargrass		5

Treatment Area # 3	LAT/LONG or UTM's Center of Bed @ N41.32842 W85.68379		
Total acres to be controlled 1.4	Proposed shoreline treatment length (ft) 1204	Perpendicular distance from shoreline (ft) 50	
Maximum Depth of Treatment (ft) 8	Expected date(s) of treatment(s) mid June		
Treatment method: [X] Chemical [ ] Physical	[ ] Biological Control	[ ] Mechanical	
Based on treatment method, describe chemical used, method of physical or mechanical control and disposal area, or the species and stocking rate for biological control. Reward & Nautique or Komeen			
Plant survey method: [X] Rake [x] Visual [ ] Other (specify)			

Aquatic Plant Name	Check if Target Species	Relative Abundance % of Community
Coontail	x	20
Eurasian watermilfoil	x	10
Small pondweed	x	10
Flatstem pondweed	x	10
Common naiad	x	5
Duckweed	x	5
Watermeal	x	3
Water Stargrass		2

Treatment Area # 4	LAT/LONG or UTM's Center of Bed at N41.33127 W85.68379		
Total acres to be controlled 3.25	Proposed shoreline treatment length (ft) 2854	Perpendicular distance from shoreline (ft) 50	
Maximum Depth of Treatment (ft) 8	Expected date(s) of treatment(s) mid June		
Treatment method: [X] Chemical [ ] Physical [ ] Biological Control [ ] Mechanical			
Based on treatment method, describe chemical used, method of physical or mechanical control and disposal area, or the species and stocking rate for biological control. Reward and Nautique or Komeen			
Plant survey method: [X] Rake [x] Visual [ ] Other (specify)			

Aquatic Plant Name	Check if Target Species	Relative Abundance % of Community
Curlyleaf pondweed	x	30
Naiad	x	20
Coontail	x	15
Flatstem pondweed	x	10
Eurasian watermilfoil	x	10
Duckweed	x	5
Watermeal	x	5
Horned Pondweed		5

Treatment Area # 5	LAT/LONG or UTM's Center of Bed @ N41.32565 W85.69400		
Total acres to be controlled 12.15	Proposed shoreline treatment length (ft) 10600	Perpendicular distance from shoreline (ft) 50	
Maximum Depth of Treatment (ft) 8	Expected date(s) of treatment(s) mid June		
Treatment method: [X] Chemical [ ] Physical [ ] Biological Control [ ] Mechanical			
Based on treatment method, describe chemical used, method of physical or mechanical control and disposal area, or the species and stocking rate for biological control. Reward & Nautique or Komeen			
Plant survey method: [X] Rake [x] Visual [ ] Other (specify)			

Aquatic Plant Name	Check if Target Species	Relative Abundance % of Community
Curlyleaf pondweed	x	40
Coontail	x	15
Eurasian watermilfoil	x	10
Small pondweed	x	5
Horned pondweed	x	5
Chara	x	10
Flatstem pondweed	x	5
Spatterdock		5
White water lily		5

Treatment Area # 6	LAT/LONG or UTM's Center of Bed at N41.32041 W85.68114		
Total acres to be controlled 3.07	Proposed shoreline treatment length (ft) 2679	Perpendicular distance from shoreline (ft) 50	
Maximum Depth of Treatment (ft) 8	Expected date(s) of treatment(s) mid June		
Treatment method: [X] Chemical [ ] Physical [ ] Biological Control [ ] Mechanical			
Based on treatment method, describe chemical used, method of physical or mechanical control and disposal area, or the species and stocking rate for biological control. Reward and Nautique or Komeen			
Plant survey method: [X] Rake [x] Visual [ ] Other (specify)			

Aquatic Plant Name	Check if Target Species	Relative Abundance % of Community
Curlyleaf pondweed	x	45
Coontail	x	20
Flatstem pondweed	x	15
Naiad	x	10
Largeleaf pondweed		5
Eurasian watermilfoil	x	5

Treatment Area # 7	LAT/LONG or UTM's Center of Bed @ N41.31094 W85.67394		
Total acres to be controlled 11.25	Proposed shoreline treatment length (ft) 9802	Perpendicular distance from shoreline (ft) 50	
Maximum Depth of Treatment (ft) 8	Expected date(s) of treatment(s) mid June		
Treatment method: [X] Chemical [ ] Physical [ ] Biological Control [ ] Mechanical			
Based on treatment method, describe chemical used, method of physical or mechanical control and disposal area, or the species and stocking rate for biological control. Reward & Nautique			
Plant survey method: [X] Rake [x] Visual [ ] Other (specify) Survey Data From May, 2005 Tier II			

Aquatic Plant Name	Check if Target Species	Relative Abundance % of Community
Coontail	x	20
Eurasian watermilfoil	x	15
Spatterdock		15
Curlyleaf pondweed	x	10
Duckweed	x	5
Watermeal	x	5
Flatstem pondweed	x	3
Sago pondweed	x	2
Largeleaf pondweed		5
Naiad	X	20

Page 5 of 6

Treatment Area # 8		LAT/LONG or UTM's Treat EWM and CLP wher it occurs (determine following survey)	
Total acres to be controlled	Proposed shoreline treatment length (ft)		Perpendicular distance from shoreline (ft)
Maximum Depth of Treatment (ft)	Expected date(s) of treatment(s) Curlyleaf April and Milfoil late May early June		

Treatment method: [X] Chemical [ ] Physical [ ] Biological Control [ ] Mechanical

Based on treatment method, describe chemical used, method of physical or mechanical control and disposal area, or the species and stocking rate for biological control. Aquathol K for early curlyleaf & Renovate or 2,4-D for Eurasian watermilfoil where it occurs.

Plant survey method: [X] Rake [X] Visual [ ] Other (specify)

Aquatic Plant Name	Check if Target Species	Relative Abundance % of Community
Curlyleaf Pondweed	X	40
Eurasian Watermilfoil	X	25
Coontail		25
Chara		5
Naiad		3
Elodea		1
Flatstem Pondweed		1

INSTRUCTIONS: Whoever treats the lake fills in "Applicant's Signature" unless they are a professional. If they are a professional company who specializes in lake treatment, they should sign on the "Certified Applicant" line.

Applicant Signature	Date
Certified Applicant's Signature	Date

FOR OFFICE ONLY

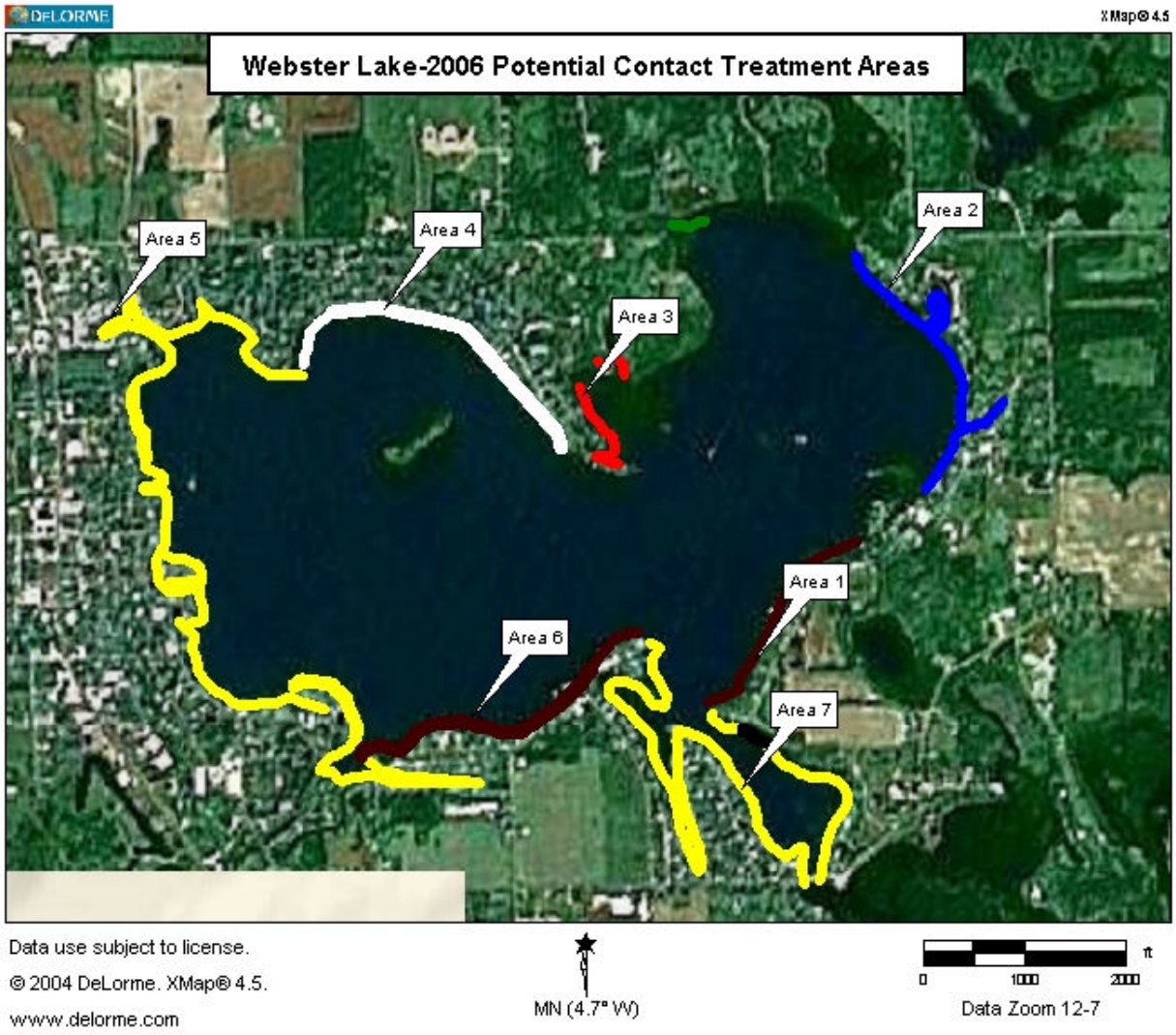
[ ] Approved [ ] Disapproved	Fisheries Staff Specialist
[ ] Approved [ ] Disapproved	Environmental Staff Specialist

Mail check or money order in the amount of $5.00 to:

DEPARTMENT OF NATURAL RESOURCES
DIVISION OF FISH AND WILDLIFE
COMMERCIAL LICENSE CLERK
402 WEST WASHINGTON STREET ROOM W273
INDIANAPOLIS, IN 46204

AQUATIC CONTROL

Webster Lake Vegetation Control Permit Map (Page 6 of Permit)



2007 Backwater Lake Permit

APPLICATION FOR AQUATIC VEGETATION CONTROL PERMIT
State Form 26727 (R / 11-03)
Approved State Board of Accounts 1987
[ ] Whole Lake [x] Multiple Treatment Areas
Check type of permit

INSTRUCTIONS: Please print or type information

FOR OFFICE USE ONLY
License No.
Date Issued
Lake County

Return to: Page 1 of 4
DEPARTMENT OF NATURAL RESOURCES
Division of Fish and Wildlife
Commercial License Clerk
402 West Washington Street, Room W273
Indianapolis, IN 46204

FEE: $5.00

Applicant's Name	Lake Assoc. Name	
Webster Lake Conservation Association	Webster Lake Conservation Association	
Rural Route or Street: 85 EMS W19		Phone Number: 574-372-7291
City and State: North Webster, IN		ZIP Code: 46555
Certified Applicator (if applicable)	Company or Inc. Name	Certification Number
Rural Route or Street		Phone Number
City and State		ZIP Code

Lake (One application per lake)	Nearest Town	County	
Backwater Lake	North Webster	Kosciusko	
Does water flow into a water supply		[ ] Yes	[x] No

Please complete one section for *EACH* treatment area. Attach lake map showing treatment area and denote location of any water supply intake.

Treatment Area # 1	LAT/LONG or UTM's Lower 2/3 of lake early season treatment		
Total acres to be controlled 75	Proposed shoreline treatment length (ft)	Perpendicular distance from shoreline (ft)	
Maximum Depth of Treatment (ft) 6	Expected date(s) of treatment(s) mid April		
Treatment method: [ ] Chemical	[ ] Physical	[ ] Biological Control	[ ] Mechanical

Based on treatment method, describe chemical used, method of physical or mechanical control and disposal area, or the species and stocking rate for biological control. Treat Eurasian watermilfoil and CLP with 2,4-D and Aquathol

Plant survey method: [X] Rake [X] Visual [ ] Other (specify)

Aquatic Plant Name	Check if Target Species	Relative Abundance % of Community
Coontail		30
Curlyleaf Pondweed	x	30
Eurasian watermilfoil	X	30
Spatterdock		5
White waterlilly		3
elodea		2

AQUATIC CONTROL

Page 2 of 4

Treatment Area # 2	LAT/LONG or UTM's Center of bed at N41.31430 W85.66890		
Total acres to be controlled 4	Proposed shoreline treatment length (ft) 2050	Perpendicular distance from shoreline (ft) 75	
Maximum Depth of Treatment (ft) 5	Expected date(s) of treatment(s) mid June		
Treatment method: [X] Chemical [ ] Physical	[ ] Biological Control	[ ] Mechanical	
Based on treatment method, describe chemical used, method of physical or mechanical control and disposal area, or the species and stocking rate for biological control. Reward, komeen and aquathol will be used to control vegetation near docks and in boat lanes			
Plant survey method: [X] Rake [X] Visual [ ] Other (specify)			

Aquatic Plant Name	Check if Target Species	Relative Abundance % of Community
Coontail	x	30
Eurasian watermilfoil	x	30
Curlyleaf pondweed	x	30
Duckweed	x	5
Watermeal	x	2
Spatterdock		3

Treatment Area # 3	LAT/LONG or UTM's Center of bed at N41.3186 W85.66890		
Total acres to be controlled 2	Proposed shoreline treatment length (ft) 1068	Perpendicular distance from shoreline (ft) 75	
Maximum Depth of Treatment (ft) 5	Expected date(s) of treatment(s) mid June		
Treatment method: [X] Chemical [ ] Physical	[ ] Biological Control	[ ] Mechanical	
Based on treatment method, describe chemical used, method of physical or mechanical control and disposal area, or the species and stocking rate for biological control. Reward, Komeen, and Aquathol will be used to control vegetation in boating lane and around docks			
Plant survey method: [X] Rake [X] Visual [ ] Other (specify)			

Aquatic Plant Name	Check if Target Species	Relative Abundance % of Community
Coontail	X	30
Eurasian watermilfoil	x	30
Curlyleaf pondweed	x	30
Spatterdock		5
Duckweed	x	4
Watermeal	x	1

Page 3 of 4

Treatment Area #	4	LAT/LONG or UTM's	Center of bed at N41.31757 W85.66218
Total acres to be controlled	1	Proposed shoreline treatment length (ft)	570
Maximum Depth of Treatment (ft)	4	Expected date(s) of treatment(s)	1-Jun
Perpendicular distance from shoreline (ft)	50-75		

Treatment method: [X] Chemical [ ] Physical [ ] Biological Control [ ] Mechanical

Based on treatment method, describe chemical used, method of physical or mechanical control and disposal area, or the species and stocking rate for biological control. Reward, Komeen, and Aquathol

Plant survey method: [X] Rake [X] Visual [ ] Other (specify)

Aquatic Plant Name	Check if Target Species	Relative Abundance % of Community
Coontail	x	30
Curlyleaf pondweed	x	30
Eurasian Watermilfoil	x	30
Spatterdock		5
Duckweed	x	2
Watermeal	x	1
White water lily		2

INSTRUCTIONS: Whoever treats the lake fills in "Applicant's Signature" unless they are a professional. If they are a professional company who specializes in lake treatment, they should sign on the "Certified Applicant" line.

Applicant Signature	Date
Certified Applicant's Signature	Date

FOR OFFICE ONLY

[ ] Approved [ ] Disapproved	Fisheries Staff Specialist
[ ] Approved [ ] Disapproved	Environmental Staff Specialist

Mail check or money order in the amount of $5.00 to:

DEPARTMENT OF NATURAL RESOURCES
DIVISION OF FISH AND WILDLIFE
COMMERCIAL LICENSE CLERK
402 WEST WASHINGTON STREET ROOM W273
INDIANAPOLIS, IN 46204

Backwater Lake Vegetation Control Permit Map (Page 4 of Permit)